September 2006/$4

AIR FORCE

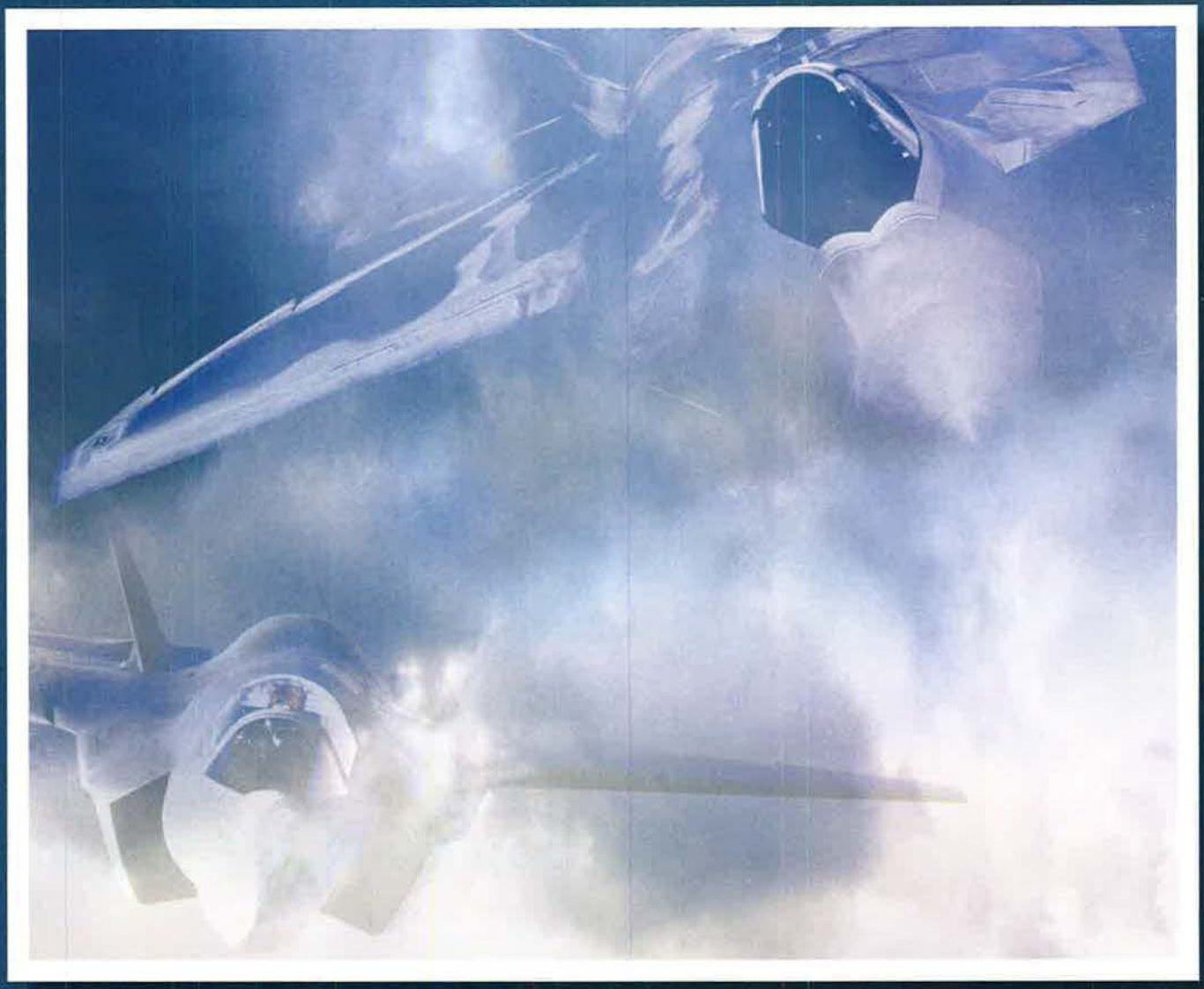
JOURNAL OF THE AIR FORCE ASSOCIATION MAGAZINE

Air Mobility's Never-Ending Surge

F-35, Struggling for Altitude

An Air Guard for the Future

The JDAM Revolution



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September 2006, Vol. 89, No. 9

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Editorial

By Robert S. Dudney, Editor in Chief

The Air War Over Hezbollah

WASHINGTON, D.C., AUG. 13, 2006

"'AIRPOWER' Assumptions Shot Down Over Lebanon," read a provocative headline on an Aug. 2 Reuters news agency dispatch from Israel.

In recent years, said the story, experts had believed that heavy use of airpower was the surest way to win a war. Yet the vaunted Israeli Air Force did not achieve victory over Hezbollah, it noted.

Reuters did not say the IAF was without value, only that its failure to halt the Shiite militia's missile attacks had "cast doubt" on the whole "theory" of airpower.

If such drivel were to become conventional wisdom—and a recent outpouring of copycat media commentaries suggests it's possible—the collateral damage could extend far beyond the Mideast.

The US Air Force might suffer associated blowback. The war in Lebanon, which blazed up on July 12, has emboldened USAF critics to challenge airpower anew, in part because of similarities between the US and Israeli air forces.

The IAF's 21 fighter squadrons feature F-15s and F-16s and USAF precision weapons. The two air arms employ similar tactics. Any perceived weakness in one, the thinking goes, could indicate a weakness in the other.

In reality, the IAF has not shown weakness. To the contrary, it has demonstrated, to anyone willing to see, tremendous power.

IAF pilots cut Syrian and Iranian resupply routes to Hezbollah. They destroyed huge swaths of militia infrastructure. They choked off escape routes and killed hundreds of fighters. They bombed senior leadership. They supplied critical aerial reconnaissance.

What, then, could the critics be talking about?

The main claim seems to be that Israeli airpower did not prove to be "decisive." Precisely what is this supposed to mean—that IAF did not, all by itself, defeat the entrenched, highly organized Hezbollah fighters, who had six years to prepare heavily protected positions?

If that is the standard, no modern military service anywhere would pass the test. One might ask the critics: When was the last time the Israeli Army won a war all by itself? Or the US Army?

Moreover, the IAF wasn't working solo. Columnist Charles Krauthammer might blast Israel for "foolishly relying on airpower alone," but Israeli artillery, special operations forces, and Navy units were engaged from the beginning.

Deputy Prime Minister Shimon Peres (a former Defense Minister) told *Newsweek's* Lally Weymouth on Aug. 6 that Jerusalem planned "to use airpower and ground power for different reasons."

It is outrageous to imply that modern airpower is some kind of theory. It is a fact.

Said Peres: "We used the airpower to bomb the headquarters of Hezbollah, ... and then we decided to destroy their communication systems. ... Now we are using ground forces [to hit the fighters] because they hide weapons in private homes and villages."

Some would deny Israeli airpower the "decisive" label because, in their view, its contributions were marginal. It's a hard sell, however.

The *Jerusalem Post* of Aug. 6 reported that, over the war's first 26 days, the IAF flew 8,700 sorties and struck 4,600 targets. These included 260 Hezbollah headquarters and command buildings, 60 bunkers, 70 weapons warehouses, 30 Hezbollah infrastructure targets, 90 rocket launchers, 50 bridges on Hezbollah's lines of communication, and more than 100 vehicles suspected of hauling rockets or guerrillas.

"We bombed the road from Syria to Lebanon so they won't be able to send rockets in," Peres said, "and we bombed the runways [in Beirut] so Iranian planes will not bring in resupplies."

IAF struck 1,200 missile launch sites and the roads leading to them. In the first two days of war it eliminated a large part of Hezbollah's medium-range and long-range missile force (though thousands of mobile short-range Katyusha rockets remained).

Then there is the matter of civilian casualties, a problem characterized by various talking heads as the wages of reliance on airpower. Cited as Exhibit A was the IAF's July 30 attack on the town of Qana, which killed 28 Lebanese. Jerusalem claimed Hezbollah used the town as a missile launch site.

Retired Army Maj. Gen. Robert H. Scales, a boots-on-the-ground stalwart, blamed the attack on "an over-reaction by the Israeli Air Force." Scales' contempt for airpower is clear but illogical. Does he really believe a full-scale Israeli invasion would produce fewer civilian deaths? Everyone else knows a meat-grinder ground offensive would be far worse.

These critiques of Israeli air operations are reminiscent of those that followed US Air Force successes in the 1991 Gulf War, 1995 Balkan War, 1999 Air War Over Serbia, 2001 war in Afghanistan, and 2003 war in Iraq.

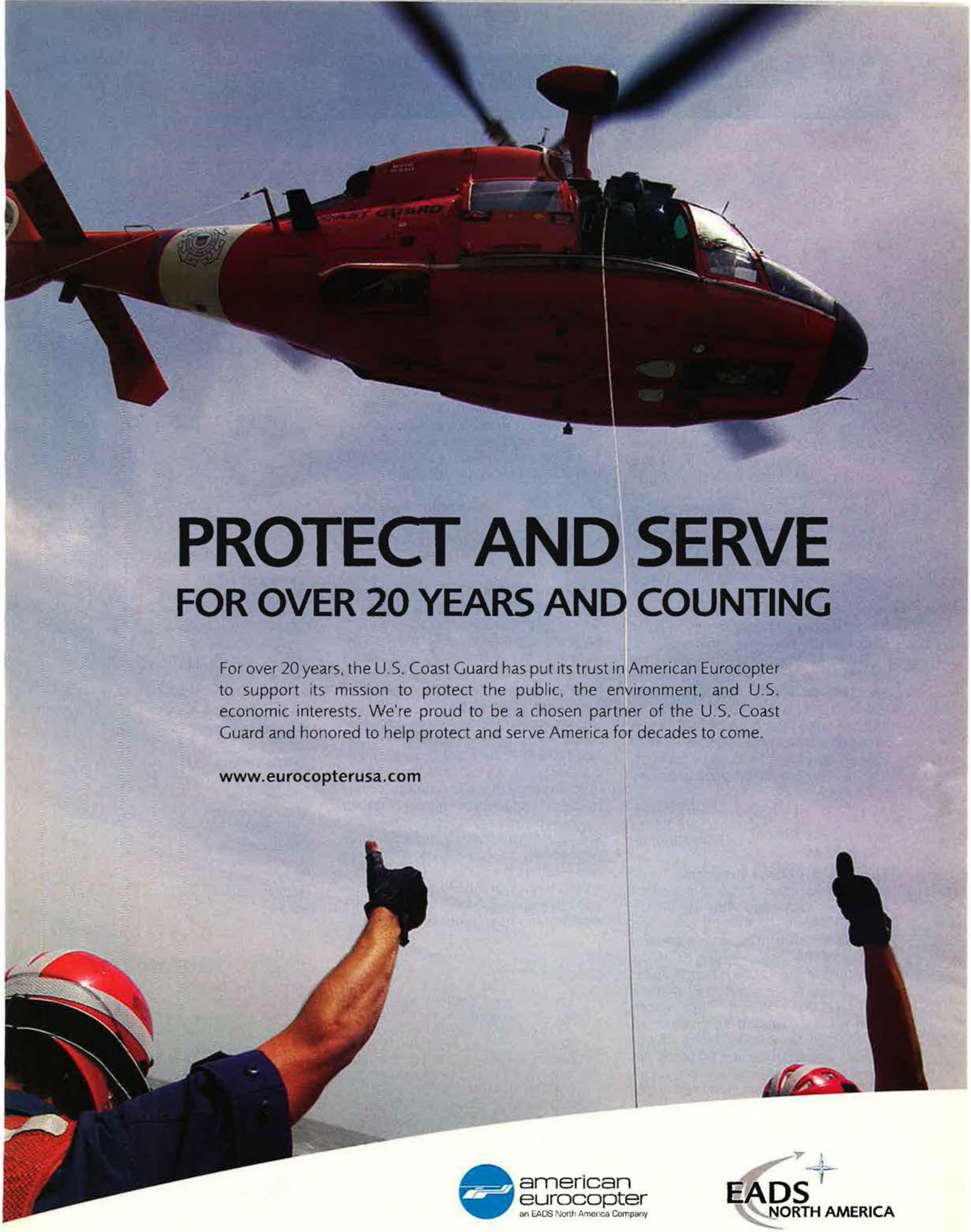
In those cases, some Army partisans argued that "boots on the ground," not aircraft and precision strike, contributed most to US victory. Now, as then, what is at stake are force structure, budget shares, and more.

At this writing, Israel and Lebanon were moving toward a UN-sponsored cessation of hostilities. The war has been waged for a full month. Israel estimated that Hezbollah had 13,000 rockets at the start, and these weapons continued to rain down on cities and towns of northern Israel.

Plainly, the IAF's air campaign did not defeat the Hezbollah missile threat. Nor, it must be added, was that goal achieved by Israel's ground forces. Jerusalem had some 10,000 troops in the field for several weeks. Progress was been steady, but slow.

This does not change the fact that Hezbollah has been dealt a blow from which it is not likely to recover any time soon. Airpower gets a big part of the credit.

It is outrageous to imply that modern airpower is some kind of theory. It is a fact. It may not be sufficient by itself, or "decisive" as that word is strictly defined. Yet when all is said and done, it will be seen that airpower achieved quite a lot. ■



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Letters

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The "Real Fight," Reconsidered ...

I have had enough of the pompous comments from armchair strategists [saying] that the Air Force is superfluous in the war on terror because all the country needs is more "boots on the ground"—and, by inference, the Navy is also unnecessary (except for the Marines). *["Editorial: The Real Fight, Reconsidered," July, p. 2.]*

Such a shortsighted view of military requirements, now and in the future, ignores the existence of a bellicose North Korea, a rearming, re-equipping, and modernizing Russian military, and a China that is spending huge sums to improve its military capability so as to possibly establish hegemony in East Asia and the Western Pacific.

Those who currently denigrate the Air Force mission and needs seem to believe that all our threats for the foreseeable future will consist of insurgents and terrorists. Such an obscure view of current and future threats smacks of only recognizing the current problem and "let's ignore the other possibilities out there."

Col. Lee R. Pitzer,
USAF (Ret.)
O'Fallon, Ill.

The New Air Force Program

I enjoyed John Tirpak's excellent article entitled "The New Air Force Program" *[July, p. 30]* and offer one brief clarification. The article implied that all of the tanker fleet's KC-135s were built in the 1960s. Though some were, I flew tankers out of Barksdale Air Force Base (in the '70s) whose tail numbers revealed that they were acquired in the 1950s. Many of our tankers are approaching 50 years old and it's time to acquire new ones. The fighters and bombers that they refuel deserve it.

Col. David R. Haulman,
USAFR (Ret.)
Vicksburg, Miss.

[Regarding the statement on] p. 34, in the third column: "The F-22 ... now can hit a heavily defended target with two 2,000-pound satellite guided bombs." While the F-117 can carry two 2,000-pound PGMs, I believe the F-22 is limited to two 1,000-pound GBU-32 JDAMs. I know it's confusing that 2,000-pound JDAMs are GBU-31s, and 1,000-pound JDAMs are GBU-32s, but that's a rant for a different day.

Jim Rotramel
Lexington Park, Md.

■ *The reader is correct.—THE EDITORS*

A Loggie as Chief?

Your article "A Changing of the Guard" *[July, p. 60]* was an excellent review of the struggle to control USAF in some very trying years. But I think the article misses the real point beyond bomber general vs. fighter general, which is: Why hasn't a navigator, logistician, civil engineer, maintenance, etc., general been chosen to head USAF? Just because you are capable of flying an aircraft does not automatically qualify you for top command, nor should your nonselection to fly exclude you from top command. If you look at your typical captain fighter pilot today, he commands a crew of one—himself—while a transporter, civil engineer, or maintenance captain can have up to 200 folks under him. So who would know better about leader-

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To educate the public about the critical role of aerospace power in the defense of our nation.

To advocate aerospace power and a strong national defense.

To support the United States Air Force and the Air Force family.

ship, management, and dealing with the "system"?

USAF needs to look at its ranks closer to find the best managers instead of automatically picking ones with pilot wings.

Lt. Col. Bill Heisel,
USAF (Ret.)
Swansea, Ill.

A big thank you to *Air Force* Magazine for publishing the excellent article "A Changing of the Guard," by Maj. Gen. R. Mike Worden.

I would like to think there are still several of us retired SAC members out here who can relate to that article 100 percent. I know I can, even though the general mentioned some things that I was not aware of with my 20-plus years in SAC.

One of the most interesting aspects of the article was reading the names of some of the best colonels and general officers in the Air Force and their accomplishments again. Men like Gen. Curtis LeMay (the best general who ever wore the blue uniform), Col. Russell E. Dougherty, later to be a four-star general, Gen. Thomas S. Power, Lt. Gen. Alvan C. Gillem II, Gen. John D. Ryan, Gen. Joseph J. Nazzaro, Gen. John P. McConnell, Gen. Bruce K. Holloway, just to name a few. One general he did not mention, though, was Lt. Gen. Richard M. Hoban, who commanded the 410th Bomb Wing at K.I. Sawyer Air Force Base as a colonel. He was another outstanding SAC officer.

Even in the late '50s and '60s, it was a bomber generals' Air Force.

As I read the article, I was reminded of how the SAC maintenance people (I was on the maintenance side) operated and how the flight line was managed. When the flight schedule (60-9) was signed off on and published, that was what you did. We went by it and made sure every airplane scheduled was OR (operational ready).

SAC flight crews and maintenance people were the best. Most of my SAC career was spent on the tankers—KC-97E, F, and G models and KC-135A and Q. But I got very acquainted with the B-52D, G, and H models too.

Again, thank you, General Worden, for writing the excellent article and bringing back some great memories to us retired SAC people.

CMSgt. Donald W. Grannan,
USAF (Ret.)
Benbrook, Tex.

Not-So-Fragmented Battlespace

"Airpower in a Fragmented Battlespace" *[July, p. 68]* by Rebecca Grant begins with an interesting premise. This premise states that the classic lines on the battlefield are going the way of the horse cavalry and the sailing ship. While interesting, Ms. Grant's premise is indicative of the current crop of think-tank doctrinarians who inhabit such places as RAND. It is at its heart and core dead wrong.

To be sure, these lines need some major re-evaluation to understand their applicability on the nonlinear, fragmented battlefield, but they are as alive and well today as they were when Ogg the caveman first took his war club across the valley to smash in his neighbor's head. There is nothing new under the sun, battle lines are battle lines, and whether the conflict is between street gangs or massed armies, battle lines have always existed and will continue to exist as long as armed conflict exists. They are essential to the way in which a soldier views his world.

While Ms. Grant is correct in her statements that these lines were essential for controlling the movements and fire of massed armies in the field, she would have us believe that this may no longer be the case. This betrays not only an essential misunderstanding of the true nature of battle lines, it also shows a lack of understanding of the movements and fire of massed armies in the field.

When a soldier first takes to the field, the first thing he does is define his personal battlespace. It is an instinctive reaction based on his sense of personal survival and self-preservation. Good guys this way, bad guys that way. He notes threat zones and considers potential fields of fire. In short, he draws lines in the sand that define his personal battlespace. He draws battle lines.

Although he may not call them such, each individual soldier will establish in his mind something akin to a forward line of troops, a fire support control line, and a bomb control line. These lines will roughly correlate to the soldier's threat zones and stress levels in the heat of battle. They may or may not be consciously defined, but they provide the soldier with some semblance of control in an otherwise uncontrollable environment, even if that semblance of control is an illusion.

The soldier's first reactions are personal in nature, but combat is the ultimate in team activities, so the second thing the soldier does is link his personal battlespace to that of his neighbors. It begins with the individual linking to his

closest squad mates. Then full squads link their personal battlespaces and coordinate management of that battlespace. Larger battle lines are drawn. Larger and larger organizations link and coordinate until we have the readily identifiable battle lines classically used to control the movements and fires of massed armies in the field.

In the classic model of the linear battlefield, these lines are easily identifiable. They can be seen, moved, and manipulated by the battlefield planner to achieve the objectives of the moment. Strong points can be identified or avoided, weak points reinforced or exploited, supply routes established, disrupted, or protected.

In the nonlinear, noncontiguous, fragmented battlespace, the classic model breaks down. The lines are still there but not as readily identifiable. They exist, but are exceedingly hard to find or to figure out what to do with them once they are identified. They are not always intuitively obvious from the perspective of the battlefield planner. They are, however, still readily visible from the perspective of the individual soldier and the small unit.

Since the times of Alexander and Sun Tzu, all massed army maneuvers can be deconstructed into a series of coordinated small unit operations. To use two of Ms. Grant's examples, the action of the 20th Maine Infantry Regiment at Little Round Top is a classic small unit action upon which the fate of massed armies hinged.

Guderian's panzer thrust into the Low Countries was predicated on the concept of a small unit attacking on a narrow front in overwhelming force at the point of impact. The attacking unit punches a small hole, covers to the flank, consolidates its gains, and makes way for the next unit to exploit the hole and widen it. This is the essence of blitzkrieg. While the whole army moves as a single entity, the point of the spear is always a series of alternating coordinated small unit attacks against shifting, very narrowly defined targets. Thrust, cover, consolidate; thrust, cover, consolidate, etc. Before you know it, you're in Paris.

In the contiguous linear battlespace the actions of the small unit are often masked or overshadowed by the actions of the armies massed around them. In the fragmented battlespace model, the massed armies may not exist and small unit operations are paramount. In the fragmented battlespace, where the deep insertion of troops is possible at any time and any place within the battlespace, all operations either are or act like small unit operations. There is no front. There is no rear. There is no flank. The modern warfighter must maintain the flexibility to adapt to the developing conditions within the battlespace.

So here is the crux of General Moseley's question, "How do you then support land component activities in nonlinear distributed battlespace?": The trick is to recognize the lines established by the troops who draw them and depend on them for survival, not to establish arbitrary lines or non-lines for the benefit of mission planners a world away. The real question is: How do we provide the troops who define them the ability to communicate to the planners where those lines are?

It is a daunting task but not unsolvable. The technology exists today to identify, locate, and track every soldier within the battlespace. The technology exists today to automatically monitor resource usage at the individual soldier level and automatically transmit logistic requirements to just-in-time delivery systems that could conceivably deliver a new supply of ammunition to a soldier as his last round leaves the chamber. In short, the technology exists to monitor and evaluate the combat status of every soldier within the battlespace. Current delivery packages may not yet be robust enough to be sustainable under real-time combat conditions, but the technology does exist. It is relatively low tech, inexpensive, lightweight, and commercially available off the shelf. All that is currently required is hardening and practical implementation.

The bottom line here is that if you are able to accurately position and evaluate the status of resources within the battlespace, you can identify and locate where the battle lines must be. The battlespace becomes visible, and if the battlespace is visible, it can be defined, manipulated, and controlled.

Lest you think I find no merit with Ms. Grant's article, her last two paragraphs contain two very important points. The first is that "nonlinear war zones increase joint force reliance on the air component and create unique stresses." This may seem intuitively obvious to those of us who have at some time been involved with the air component, but it is impossible to overstate it. It never fails to amaze me how often this simple concept has been overlooked by our colleagues in the land and sea components.

The second point, as so eloquently stated by General Moseley is that "you have to get control of the airspace first," and American air forces have been uniquely adept at doing just that almost from the beginning. Thank you, Billy Mitchell.

But it doesn't stop there, because

the airspace defining today's high ground includes not only the traditional physical air through which our aircraft fly, but also airwaves over which the cyber-warrior plies his trade. Today, control of the high ground implies not only control of the airspace, but also control of cyberspace, and, as has been proven time and time again in the history of armed conflict, whosoever controls the high ground wins. It's just that simple.

Maj. William J. Leeper,
USAF (Ret.)
Caldwell, Ohio

Fish in a Barrel?

While the article *["Sinking Ships," July, p. 78]* fills in a number of gaps in the information relative to the interdiction of enemy cargo ships and naval vessels by land-based aircraft in World War II, it unsurprisingly leaves an important page blank. A comparatively recent (1995) book by Carroll V. Glines, entitled *Chennault's Forgotten Warriors,* has helped to fill in that page, and some very valorous Army Air Forces aircrews have finally received the recognition they earned over 60 years ago.

Glines' Chapter 7: "The Year of Victory" quotes Gen. Charles B. Stone, commander of the Fourteenth Air Force on V-J Day, in General Order No. 114, commending the 308th Bombardment Group (H) on the latter part of its service in China, as follows:

"Between 24 May 1944 and 28 April 1945, this group preyed relentlessly on the Japanese sea shipping lanes between the Japanese homeland and her conquests throughout southern Asia and adjacent insular territories.

"During most of this period, this group was the only organization among all the Allied forces in a position to conduct interdiction operations against this vital supply line.

"Operating from bases in China, the group swept the East and South China Seas, the Straits of Formosa, and the Gulf of Tonkin through all kinds of weather, sinking and damaging nearly three-quarters of a million tons of vital Japanese shipping. They sank 107 merchant vessels and sank 12 enemy naval vessels, including three cruisers and seven destroyers. They probably sank 29 vessels and damaged 48 for a total of 427,252 tons of shipping sunk, 102,765 tons probably sunk, and 187,045 tons damaged."

General Stone goes on to tell of the 308th's crews attacks on ships, with their B-24 bombers at altitudes of 400 feet and flights over the "Hump" for gasoline and bombs to supply

its operations in China. Sea search missions originated at bases in East China behind enemy lines for several months.

General Chennault is quoted, from his memoirs, as saying: "They took the heaviest combat losses of any group in China and ... when the Army Air Forces headquarters in Washington tallied the bombing accuracy of every bomb group in combat, I was astonished to find that the 308th led them all."

There is a good deal more to be said about the 308th, but there are still aspects of its sea search operations which may or may not be in the public realm. Lt. Col. William D. Hopson was the linchpin of the low-altitude radar bombardment system's successful sea search operations by the 308th and the acknowledged expert in its use. I was trained in the maintenance, some modification, and preflighting of the specialized equipment used and have an abiding respect for the crews that placed their confidence in it. And that leads me to the aspect of the article that surprised me. On the final page of the major's article, in the last column, an exercise in November 2004, called Resultant Fury, is said to have "demonstrated the ability of fighters and bombers to hit moving ships, with precision weapons, in all weather conditions. ... Resultant Fury was judged a resounding success, demonstrating that Air Force aircraft can sink moving targets."

Perhaps I'm being naive or do not have all the facts needed to draw the following conclusion. If the 308th could do what it did in China over 60 years ago—with the "prehistoric" conditions of that time—it looks to me like an expensive shoot-the-fish-in-the-barrel project for the "modern" Navy and Air Force.

Robert C. Dick
Castine, Maine

As a retired Navy person who is also a member of AFA because I am also an airplane nut, I enjoy getting my monthly issue of *Air Force* Magazine. However, I cannot let Major Spinetta's article, "Sinking Ships," go without comment. His article was a well-written collection of historical facts, and no one will argue that land-based airplanes can lift more than carrier-based airplanes.

His implied message that naval aviation is irrelevant would probably echo a similar article that could have been written in 1948. In 1948, the newly minted USAF was the darling of the newly established Defense Department; with the B-36 and the "A" bomb there was no need for naval aviation or the USMC. USAF, with its ability to reach any part of the globe, would ensure US superiority in any area. So effective was this message that in the spring of 1948 the new super carrier CV-58, to be named *United States,* was scrapped shortly after construction had begun.

At this time, the Navy had but one amphibious group left in the Pacific and one carrier in the Far East. Then, in June of 1950, the North Koreans invaded South Korea. They pushed the UN forces back toward the Pusan perimeter. An amphibious landing in July of 1950 in the Pohang-dong area by the USMC and Army forces with tactical air support provided by carrier aircraft allowed the US to hold the line in Korea. The lack of joint tactical air doctrine, in addition to the limited range and payload of the tactical jets, would not allow USAF to provide the close air support needed for the assault. The Navy carrier-based prop driven F4-Us and AD-1s provided the support. An amphibious landing, supported by Navy and USMC tactical air, had preserved an Allied foothold on the Korean peninsula. The next year, Congress approved the building of the first four modern aircraft carriers of the Forrestal class, CVA-59 through CVA-

62. In a world that would face conflict below the level of nuclear exchange, the need for naval aviation had been firmly established.

Capt. Ralph A. Hotton,
USN (Ret.)
Belleville, Mich.

Weighing in on the Plain Blue Suit

The US Air Force has had difficulties with the service uniform continuously. Your excellent article *["Whatever Happened to the Plain Blue Suit?" July, p. 84] on* this subject revived my thoughts about this problem. Serving in SAC from 1956 to 1962 had me in the new blues with phaseouts and introductions of uniforms that were pure mistakes. Out with the comfortable summer gabardine "silver tans," and in with the ugly cotton jungle jacket/shorts is one early example. That was one very expensive "What were they thinking?" fiasco.

It is 2006, and USAF service uniforms remain unresolved. This USAF redecoration process never ends. Whimsical uniform changes give manufacturers windfalls and burden all airmen.

My belief is that all this uniform uncertainty comes from a service that has never settled on what it wants to be. The service is muddled by a lack of distinct purpose. During my USAF service time, the idea was that we were a technical force that provided a fighter-bomber-missile defense. Now, USAF has begun a slow return to being a branch of the Army in practice. Airmen can be often seen commingled with Army and Marine personnel quite alike in BDUs and duties.

Indeed, USAF today is training its personnel in hard-core combat skills. The notion of a service uniform that wants to be a business suit is erased. We have airmen wearing ribbons of battle-won honors in abundance. It is time for USAF to admit and embrace its full military nature.

No American military uniform can claim more instant recognition and respect than the full kit of the US Marines. It is time-honored, little-changed, and sharply proud in its simplicity. The pride a Marine demonstrates in uniform comes from relentless training and drill, not incrementally more pin-ons and incessant redesigns. USAF has had over 50 years to get it right and has completely failed. My chosen branch was a job and never more. I was a techie never trained to be more. I always felt militarily outclassed in the presence of uniformed Marines.

The two concluding photos in your article, showing yet more possibilities in vain, got me to write to you. In summary, rather than detail, none of the problems were addressed and more problems were added in these prototypes. For example, a general fighting fat would look absurd in a stand-up collar and belt squeezing his girth. Plus, the Brits would howl to see us using their belt once again. The tricked-up service uniforms airmen now wear are looking shiny carnival enough.

As much as we hated the Soviets, they got their uniforms right. They lost the top pockets so that all their ribbons or medals were in full display by extending downward as they collected them. Instead of fussing with staggered ribbons at the top of the rack, they simply centered the short row at the bottom. Wings and other distinctive badges moved to their right side. Every ribbon and badge got full display, not hidden under lapels. Generals got double-breasted coats to

accommodate their increasing bulk and display. The Soviets had a glorious time of pride on parade. Could we learn from them about uniform design?

Wendell Lepic
Delavan, Wis.

"Plain Blue Suit"? I visit Peterson Air Force Base several days a week—the uniform I see worn is the flight suit and some BDUs.

It is rare to see anyone in the Air Force blue uniform. And off base, the flight suit is worn in stores all across the city and in restaurants. Occasionally I also see the BDUs worn in town.

Jim Taylor
Colorado Springs, Colo.

Please tell me the uniforms depicted on p. 88 are some kind of a late April Fools' joke. Having been in USAF from 1955 to 1981, I went through more combinations of uniforms than I can remember. Bush jackets come to mind when I look at the belting of both uniforms, the Billy Mitchell heritage coat, and the Hap Arnold heritage coat. What nonsense. We redesigned the Air Force insignia and updated to something modern; now we want to dress our troops as something from a World War II [movie] central casting wardrobe. Living next to Pensacola [Naval] Air Station since 1992, I have the greatest respect for naval uniforms, from the everyday work uniform to their dashing mess dress. Their dress whites have the high collar, but it has been around for a hundred years. Please, oh please, leave well enough alone.

Lt. Col. Ray Cwikowski,
USAF (Ret.)
Foley, Ala.

I read with great interest the variety of articles in each issue of *Air Force*. In the July issue, "What Ever Happened to the Plain Blue Suit?" was of particular interest, since I have always felt there was something in the Air Force psyche as the "new" branch of the military that we could not settle down to a relatively long-term uniform. I loved the "silver tan" uniform and many other types that are now history. How about the pith helmets, bush jackets, shorts, and knee socks uniform items, so we could look like the Brits? Maybe the Navy and Marine Corps would be better examples of having uniforms that are tried, true, and imply a sense of honor and pride as they are worn.

Col. Ronald E. Nelson,
USAFR (Ret.)
Chicago

I would like to offer my opinion as a longtime student of the military uniform and not as a member of any particular service. The US Air Force has, since its inception, tried to balance its traditions with its identity as a separate and distinct military service. Nowhere is this more evident than in its uniforms. As part of establishing and maintaining its own identity, the Air Force successively adopted a variety of colors for its service dress uniform. However, it retained the Army "cut" with only minor changes (such as in the lapel) until General McPeak's revisions of the early 1990s. Many saw this not as moving away from the Army model and creating a new Air Force style, but as simply swapping the Army style for a Navy one. The backlash that ensued resulted in a compromise design that is still in use.

I think Mr. Callander's article is very well-researched and informative. I would, however, like to comment on the proposals shown in his article. I don't think the sew-in belt or the buttoned pockets are a good idea. While these may harken back to high points in Air Force history, they also do not sufficiently delineate the Air Force from the Army and are too gaudy for today's environment. Additionally,

the complexity of the female form will make it difficult to use the belt without crumpling the uniform as seen in the picture. The Air Force might want to consider using shoulder boards on the officers' uniforms. Shoulder boards were used on the Air Force whites and other formal uniforms and are still required for the mess dress. Why not get some additional use out of something you already need to get and that has always separated the Air Force from the Army? I do have to admit that I am partial to the high-collar design because it is distinctly military.

I wish the Air Force success in developing a distinctly military uniform that is not ostentatious but effectively balances its heritage with its unique identity.

Al D. Daniels
Springfield, Va.

On p. 86, the caption by the picture of Gen. George Kenney states: "Note the ... longevity hash marks on the sleeves."

What is actually shown are overseas service bars, commonly called "Hershey Bars," one for each six months overseas during wartime service.

Officers were not awarded "hash marks" for longevity. The three "V" insignia below the "Hershey Bars" are for service overseas during World War I.

CMSgt. James D. Rodgers,
USAF (Ret.)
Chino, Calif.

Callander's article on the evolution of the uniform was interesting but missed other significant uniform highlights.

In the early 1950s, the summer "silver tan" uniforms had been implemented. The gabardine officer's uniform with matching long sleeve shirt was a classic. This summer uniform was also authorized in cotton in both long and short sleeve versions. In fact, this same authorization included silver tan cotton Bermuda-length shorts and calf-length tan socks for extreme heat regions. The long sleeve version of this shirt was of a poplin fabric. Also, I believe that the early '50s also saw the introduction of the blue Eisenhower jacket for winter wear.

Col. J. Robert Nolley Jr.,
USAF (Ret.)
Richmond, Va.

Tragedy at Khobar Towers

Once again, Rebecca Grant gives us a timely article about the Khobar Towers tragedy and travesty *["Death in the Desert," June, p. 48]*. My son was TDY to the area and lived in these buildings during the time the attack was being planned. There is no acceptable explanation for the death and destruction. The article shows we must be vigilant and proactive in fighting the worldwide terrorists who threaten our way of life. Enemies and "allies" alike must understand we will not succumb or change our culture. Also, the article demonstrates that elected officials and senior civilian leaders should share accountability with senior military personnel when failure leads to unnecessary death and injury of US military personnel. Thanks and please continue to keep us informed, as *Air Force* Magazine does so well.

Lt. Col. James Beach,
USAF (Ret.)
Georgetown, Tex.

Ride of the Valkyrie

I imagine you do not get many letters from a retired "Coastie," but the article in June 2006, "The Ride of the Valkyrie" *[p. 76],* brought back a special day in my life. I grew up in Dayton, Ohio, and remember that I was in eighth grade when my father said we are going to Wright-Patterson AFB, Ohio. What a deal—a day out of school and going to the Air Force base. We were sitting along the highway with many others, when the B-70 did a flyby of the runway—a sight I can still picture quite vividly. An added bonus was the B-58 Hustler that accompanied the Valkyrie. On our yearly trips to see my folks in the Dayton area, we make it to the National Museum of the US Air Force to see the plane that almost 40 years ago I saw fly its last time. Somewhere in my parents' home is a Super 8 movie reel with that flight on it.

Tony Guerra
Duluth, Minn.

An Aviation Giant

As a former employee and admirer of Donald Douglas, I feel the urge to paint in the corners to some of Walter J. Boyne's picture, "The Rise and Fall of Donald Douglas," in the March 2006 issue of *Air Force* Magazine *[p. 76].*

Douglas was a paternal leader. I recall that he personally hired a paraplegic veteran just after the Korean War, when there were no jobs available in the postwar aviation community. He also hired a young man who badly needed work to support his pregnant wife even though he lacked any pertinent experience. Both rose rapidly and became outstanding employees in their groups. To keep the engineering pool vibrant, he hired young engineering graduates every year, good times or bad.

When the Douglas Flying Club was told by an insurance company—which was a major insurer of Douglas Aircraft—that flying club operations would no longer be covered, Don stepped in and said to cover the club or lose the account.

Mr. Douglas, according to my sources who were high up in the company, made some financial mistakes, mostly based upon principle. He refused to ask for money from the government to build manufacturing facilities when his competitors were enjoying that advantage. He declined an offer to use money carried over from the World War II excess profits tax to develop the DC-8, as a competitor later did. Before the company was acquired by McDonnell, Mr. Douglas decided not to build the DC-10 because, according to my informant from the executive staff, he did not want to be associated with an aircraft that carries 400 passengers. He didn't want to see his company's logo on the tail of the first aircraft that had many bodies around it on some distant hillside. He said, "I have released over 30 aircraft for production, and I don't care if I release another." After acquiring Douglas, McDonnell made the decision to build the DC-10. The ironies are many: The first major crash of a widebody was a DC-10, out of Paris on March 3, 1974, with 346 persons on board killed. His decision resonates today, as there are serious questions about Airbus' decision to build a monster carrier instead of several smaller planes.

Donald Douglas was one of a small group of well-educated aviation engineering giants, most of whom were named in the article, who made great contributions to our airpower while preserving their ideals in the workplace.

Lorrin Peterson
Kerrville, Tex.

Washington Watch

By John A. Tirpak, Executive Editor

Guard and Reserve for Peace and War; The Warthog Will Live Long; McCain Wants Costs To Be Fixed ....

No More "Strategic" Reserve

The National Guard and Reserve components of the US armed forces no longer serve as a "strategic" backup for active duty forces in time of major war. Instead, they provide an "operational" element, integral to day-to-day military activity, in peace and war. The Pentagon needs to admit that fact and make some changes in how it relates to the Guard and Reserve—or risk great damage to the overall force.

That warning was issued by the Center for Strategic and International Studies in July, in the third and last phase of its broad, multiyear review of how the military is structured for the 21st century. The project, called Beyond Goldwater-Nichols, has already yielded two blueprints for transforming force structure and weapon acquisition.

The BG-N study said the US military can't do everything it needs to do without relying on the backup components. They are so stressed that, without action to address their problems, they "will begin to falter—the question is merely when this will start to happen." Nothing less than "the health of the all-volunteer force" is at risk, CSIS said.

The CSIS effort is just one of several top-level examinations of the reserve issue being conducted by blue-ribbon panels. However, the CSIS method has been to get almost constant feedback, which it calls the "vetting" process, from DOD over the course of its study. Hence, the review's conclusions to some degree reflect the views or agreement of top defense officials, though it does not carry their specific endorsement.

The study was Congressionally directed and paid for by the Pentagon.

The landmark Goldwater-Nichols legislation of 1986 substantively restructured the military. It drew to some degree on CSIS recommendations, hence the name of the review.

The new study made more than 40 recommendations for addressing what it called "the reserve component." That title, however, belies the great diversity of the military's backup forces—the Air National Guard, Air Force Reserve, Army National Guard, Army Reserve, Navy Reserve, Marine Corps Reserve, and Coast Guard Reserve.

The CSIS authors noted that their suggestions are not "one size fits all," because all seven reserve components have unique issues and needs.

The top recommendation was to integrate the active duty, Guard, and Reserve elements across all military functions, not just "one or two missions" in wartime. The Guard and Reserve should be able to participate in homeland defense, stability operations, and civil support duty and move beyond a "historical focus on fighting 'the big war.'"

Employing the backup forces as part of the operational force has become "mandatory, not a choice," CSIS said.

The BG-N panel sharply attacked suggestions that the head of the National Guard should be installed on the Joint Chiefs of Staff.

Making the chief of the National Guard Bureau a four-star general or putting him on the JCS "would not necessarily give the National Guard a greater voice" in debates over strategy or resources and "would send the counterproductive signal that the National Guard is a separate military service, rather than an integral part" of the Army and Air Force, the panel said.

USAF photo by TSgt. Chris Vadnais

They are all operational now.

Rather, CSIS suggested that Guard and Reserve leaders be consulted "early on during critical policy and budgetary debates." Excluding them—as has often happened—will only lead to "divisive external battles during the Congressional budget process."

The group suggested making the chief of the National Guard Bureau the "principal advisor to the Secretary of Defense for matters concerning the National Guard in homeland security, homeland defense, and civil support missions." This would eliminate one layer between the Secretary and the Guard bureau chief—the JCS—and this is "wholly appropriate" given that the Guard is so critical to all those missions.

The role of the Guard in dealing with both homeland security and domestic disasters needs more formal recognition, and the CSIS group suggested a much more visible and powerful role for the Guard in this area. It suggested that the Guard serve as the statutory and practical "backbone" of both efforts, to take advantage of its existing infrastructure, which is keyed into both federal and state bureaucracies.

A Guard officer should be appointed deputy commander of US Northern Command, the study group recommended. This will ensure that NORTHCOM is keenly aware of Guard "capabilities, culture, and constraints" in dealing with ongoing security or domestic crises, and that the Guard is effectively employed against them.

Practical Suggestions

The CSIS report on the Guard and Reserve offered many practical suggestions for easing the process of integrating backup forces into the mainstream force and avoiding a huge exodus from the ranks.

For starters, it said the Army, both active and reserve, must have more combat force structure, ideally adding five additional active brigade combat teams. Not only is this needed to reduce the strain on the existing Army, but a larger force will be a "hedge against risk if the transition


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to a more operational Army Guard and Reserve goes less smoothly than planned."

The study called for an extra $13 billion over the next six years to "reset" the Army and its RC, replacing equipment lost in the wars in Southwest Asia and bringing the RC up to the same level of equipment as the active force. There should be an end to the "tiered readiness" model of the past in equipping the Guard and Reserve.

While the Army is going to a more "rotational model" of swapping Guard and Reserve troops in and out of the combat zone, the program is "underdeveloped and under-resourced," CSIS found.

There needs to be a "much more flexible system" to bring members of the RC onto active duty, the BG-N study said. It needs to be "easier for more people to serve in new and different ways."

The services should, as quickly as possible, integrate their pay and personnel systems and benefits for active and RC members. The Marine Corps has already done this, but the other services are lagging behind. This move would permit "seamless transitions" from one status to another.

The services should consider paying reservists more if they agree to additional, or more frequent, call-ups—what the study group called "intensive reserve." Also, the services should "revitalize" the Individual Ready Reserve program, which is the reservoir of those who have separated from the military. The services should make a "full court press" to consult those who have separated to gauge their interest in more active reserve duty. The IRR obligations should also be "clarified in their initial contracts" so that service members know they can be involuntarily recalled if Uncle Sam needs them.

The BG-N group discouraged any notion of expanding the Tricare system for reservists, saying it is expensive and there hasn't been enough study yet to determine the impact of creating "an entitlement policy of this magnitude." Such an expansion would also undercut funding for equipment and training, the team asserted. Likewise, the group urged that the military retirement system not be altered to lower reserve retirement ages, as has been suggested elsewhere. (See "Action in Congress: Some Reserve Ideas," May, p. 32.) Such a move would "likely harm efforts to retain RC personnel with many years of valuable experience."

To keep Guard and Reserve troops from getting fed up with all the disadvantages of being on active duty with few of the benefits, the CSIS offered some other suggestions.

New recruits should be shielded from overseas deployments for two years. Instead, they would be guaranteed "at least two years at home prior to their being called up" with their unit. Some state units are already doing this; CSIS said the Pentagon should encourage the tactic with all reserve components.

Since 2002, green card holders who enlist in the active duty force or who deploy to Southwest Asia have been granted accelerated citizenship. The BG-N study suggested expanding this rule for all green card holders in the Guard and Reserve.

Those who sign up for the reserve component should be excused from activation while they are full-time students, as long as they agree to serve a longer overall hitch, the study suggested. This would "remove a significant barrier to the recruiting of college-bound or enrolled individuals" and improve the appeal of the RC to "high-quality recruits."

A mobilization tour should be kept to "no more than a year" for Guard and Reserve members. Long deployments are "frequently cited as a major source of dissatisfaction" with the reserve component by members and their families. Long deployments threaten small businesses where the member may be the sole or principal employee. The military needs to "enhance predictability and reduce the burden on families and employers."

Since families have a big vote on whether a member continues to serve, there needs to be more tangible benefits to get their support. The CSIS team recommended that members should be able to transfer their educational benefits, such as tuition assistance, to spouses.

Building Better Warthogs

The A-10 fleet—all of it—will get a major upgrade over the next five years, stretching its service life and sharply reducing the need for the Air Force to buy any F-35B short takeoff and vertical landing Joint Strike Fighters.

Air Combat Command had been grappling with the A-10 upgrade since last fall, when its hope to add precision engagement improvements to "some" of the A-10 fleet was an issue for budget debate. The upgrade was threatened by the discovery of wing cracks in a majority of Warthogs (See "Washington Watch: Still My Number," April, p.10.) The A-10 enhancement was held out as an "unfunded priority" in Fiscal 2007 budget documents.

Gen. Ronald E. Keys, head of ACC, said in February it was then being discussed how much of the A-10 fleet should be fixed, how long to keep it in service, and whether all or just some of the fleet should get the precision advances.

The debate appears to be settled. Gen. T. Michael Moseley, USAF chief of staff, told *Air Force* Magazine in July that the service will "completely" re-wing those A-10s needing the fix, which ACC reported as 210 aircraft. The modification will involve structural refurbishing; USAF will "not just reskin them," Moseley said.

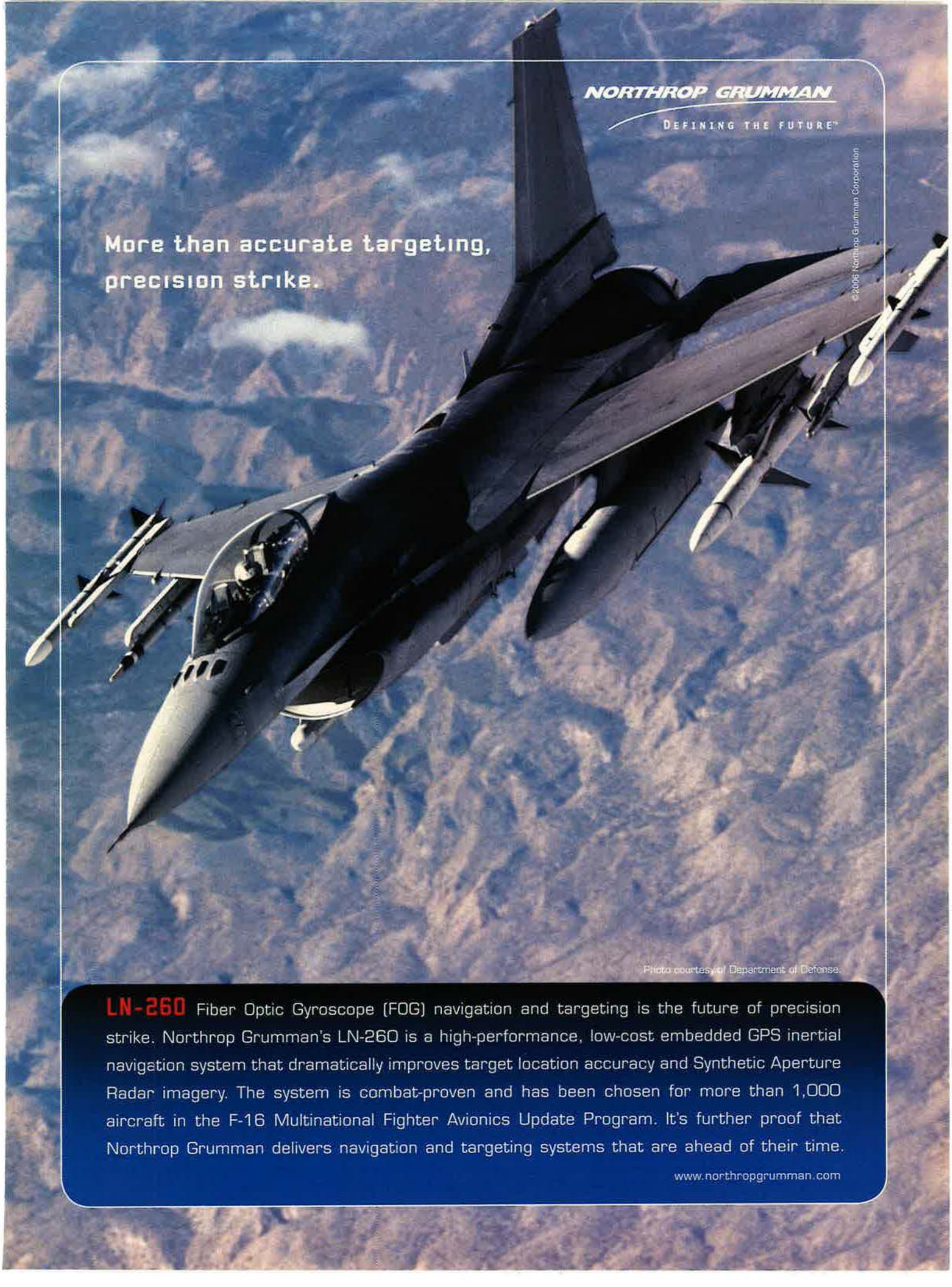
As a result of the "Hog Up" program, the A-10 "now will be a significantly different airplane than it was before," Moseley asserted.

The entire fleet of 356 A-10s will get further structural improvements and all will get the "precision engagement" upgrade. This will allow all A-10s to carry and use advanced targeting pods, laser- and satellite-guided bombs, and new networking gear. The improvements will allow the A-10 to attack targets from much higher altitude—well above many modern surface-to-air threats. It also adds some new cockpit displays and digital equipment.

Two years ago, the Air Force considered retiring 75 of its A-10s and using the operating and maintenance savings to pay for the precision update. However, an ACC official said that "several independent analyses" have determined that keeping the whole fleet of 356 aircraft is "very important to force structure plans ... in terms of rounding out [the Air Force's] capability needed for the long term."

USAF photo by SSgt. Lanie McNeal

A-10s will be around for a while to come.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However, there was a casualty in the A-10 deliberations.

"The A-10 engine money fell out," Moseley said. Re-engining the airplane, which is flying with its original equipment TF34s, was one of his priorities, and he said he still has hope that a way can be found to afford it.

"I still want to re-engine those things," Moseley said. "That's where my heart is. That's where I want to go."

Giving the A-10 such a substantial improvement could keep it in the inventory well into the 2020s. It could also obviate the need for the Air Force to buy any short takeoff and vertical landing models of the F-35, which it had been considering as an A-10 follow-on. (See "Struggling for Altitude," p. 38.)

"If you have that force structure intact—the airplane's modernized—and you have the force structure of attack, do you need to do something else that is an inherent CAS [close air support] airplane?" Moseley pointed out. "Don't know yet," he said.

For several years, the service has been thinking about buying between 200 to 400 B models, which might be useful for keeping close to troops who might need CAS.

However, the F-35B will cost about 32 percent more than the F-35A conventional takeoff version that the Air Force is buying, "and that's significant money," Moseley continued.

"It's less maneuverable, because it's heavier, it's got a little bit less range," he added. The Air Force is "still thinking" about the STOVL, Moseley said, but he seemed to be making the case against it.

The Air Force leadership would be "closer" to a decision on buying the F-35B after the 2008 program objective memorandum process was finished, he added. The POM was supposed to be wrapped up in August.

McCain's Ghost of Contracts Past

Sen. John McCain (R-Ariz.) wants to bring back a long-discredited method of cutting costs on big-ticket development programs: awarding such contracts on a fixed-price basis. Trouble is, neither the Pentagon nor the aerospace industry thinks the move will save any money—and could actually end up making things much more expensive.

McCain's move was tacked onto the Fiscal 2007 defense authorization bill. He added a provision that the Pentagon should use fixed-price contracts for any new development programs unless the Defense Secretary provides good reasons, in writing, why such a method is inappropriate for a given system.

Incensed at big cost overruns on the Army Future Combat System and Joint Strike Fighter, McCain wants to eliminate cost uncertainty and get better accountability from contractors. But going back to fixed-price contracting probably won't work, according to the Pentagon's director of defense research and engineering, John J. Young Jr.

While "it's possible" the idea might have "some merits in controlling cost," Young said, "I think it's more likely that it will have the opposite effect."

Forcing industry into fixed-price deals will in turn cause contractors to "price-in that risk," Young said in July. "Companies will not want to take the chance that they will lose money."

Inevitably, some risks will be underestimated, and a company will lose money. "That won't have to happen very many times" before companies get highly aggressive in pricing risk in all aspects of a program, even those that aren't much in doubt, Young added. That could mean cost underruns "where they will ... make substantial money."

The better solution is to make sure both government and industry understand the risk of a program going in, the better to arrive at costs and incentives to make the contractor perform, he asserted. Those incentive fees should be built into the right milestones, and if the company succeeds, "pay them their profit, and that should ... [get] us all to get to the finish line together."

AP photo by Hadi Mizban

McCain discovers the fixed-price contract.

John W. Douglass, head of the Aerospace Industries Association, told reporters in July that having more stability in programs—in funding, schedule, and clearly defined requirements that don't change—will help save money more than "contract type."

He warned that insisting on fixed-type contracts would stifle innovation because industry is naturally risk-averse. Some companies, he said, would avoid bidding on contracts because they couldn't handle the financial risks. Such an environment would be especially hard on small companies that don't have the means to bear as much uncertainty as big ones, he said.

The industry also wants accountability, Douglass said, but "there are other ways" of achieving it.

Fixed-price defense contracting came into vogue during the Reagan Administration. The idea was that companies accepting such deals had a powerful incentive to innovate and meet objectives, lest they lose money.

But companies soon learned that only by accepting such deals could they get any work at all. They ended up lowballing bids to get in the door, with the idea of "getting better" during the later production phase. When delays or problems took hold, and profits vanished, so did the incentive to put the best people or the best effort into making programs work. Government didn't help, either, sometimes trying to get a free ride by increasing requirements after fixed development prices were set.

Long-term contracts are subject to the vagaries of inflation, labor and materials costs, and technical setbacks. That's why, today, the Pentagon has "evolved to ... a cost-plus arrangement," Young said, to cushion the effects of development, integration, and software risks.

The result of the 1980s emphasis on fixed-price was a contracting nightmare that ended up with the termination of a number of high-profile, multibillion dollar programs. Notable were the A-12 Navy stealth strike aircraft and the joint Tri-Service Standoff Attack Missile stealth cruise missile. (See "How the A-12 Went Down," April 1991, p. 44.)

The C-17, once in deep trouble due to a badly drawn fixed-price contract, would have suffered the same fate. However, the Air Force and McDonnell Douglas (now Boeing) agreed to scrap the contract and essentially start over with a cost-plus arrangement, each paying some of the "get well" money. As a result, the C-17 program was turned around and today is one of the Pentagon's best-performing production programs. ■

A-10C. ALL-WEATHER. ALL-POWERFUL. IN PRODUCTION.

In August, the U.S. Air Force rolled out its first production A-10C aircraft — the eagerly awaited upgrade to the service's revered close air support fighter. With integrated smart and laser-guided weapons, state-of-the-art cockpit displays, and integrated targeting systems, the A-10C's new capabilities make it a force to be reckoned with through 2028. The A-10 Prime Team congratulates the Air Combat Command, the Air National Guard, the Air Force Reserves, and Air Force Materiel Command on your success in procuring and building this tremendous new warfighting aircraft!

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Aerospace World

By Breanne Wagner, Associate Editor

Airman Dies in Iraq Accident

A1C Jerome Ware Jr. was killed July 1 in a noncombat-related accident in Iraq. He was 22. The accident is under investigation.

Ware was a security forces specialist at Camp Bucca, the largest prisoner internment camp in Iraq. He was assigned to the 15th Airlift Wing from Hickam AFB, Hawaii.

F-22 Exports Debated ...

The House voted on June 20 to lift a ban on international sales of the F-22 Raptor, which would allow allies such as Japan to buy the fighter. However, Senate appropriators voted in July to keep the foreign Raptor ban, setting the stage for a conference battle.

At issue was the Obey Amendment, drafted by Rep. David R. Obey (D-Wis.) in 1997 in the wake of controversies over whether customer countries could back-engineer and profit from the technologies in advanced weapons. There was also concern about whether allies could adequately protect those sensitive technologies.

The repeal of certain provisions of the Obey Amendment affecting the F-22 was introduced in the House by Rep. Kay Granger (R-Tex.), whose district includes 2,640 Lockheed Martin employees in Fort Worth, where the Raptor's midsection is built.

USAF photo by MSgt. Lance Cheung

A1C Matt Aggers (l) and SSgt. Randy Broome, both of the 48th Aircraft Maintenance Squadron, perform a final check on four ground-training GBU-39s. The bombs are loaded on an F-15E of the 494th Fighter Squadron at RAF Lakenheath, Britain. The squadron is the first to use the new, GPS-guided Small Diameter Bomb.

In the Senate, prominent opponents were Sen. Ted Stevens (R-Alaska), defense appropriations chairman, Sen. Byron L. Dorgan (D-N.D.), and Sen. Christopher S. Bond (R-Mo.). The Senate Appropriations Committee voted on July 18 to continue the ban.

Lockheed Martin will close the F-22 production line in 2010 if it does not book more orders. The Air Force has accepted delivery of 75 Raptors against an overall planned buy of 183 of the fighters.

... While Moseley Ponders Impact

Air Force Chief of Staff Gen. T. Michael Moseley said he might be comfortable with allowing some allies to operate the F-22 Raptor, but he wants more discussion of the issue.

Moseley told *Air Force* Magazine on July 7 that USAF has had a positive experience working with allies who bought top-rank Air Force weapons such as the F-15 and E-3 AWACS aircraft, and said the resulting relationships with those countries' air arms are an "inherent good for us."

Offering the F-22 for sale has its benefits, but "we still have to think who would be the logical customers, ... what would that mean to the production line, what would that mean to the unit cost." The method of allowing the technology transfer could be tricky, he said.

It may be logical, he said. "I'm not opposed, but I haven't had that discussion."

Air Force Thinking More Tankers

The Air Force may be planning to buy more aerial tankers than has been disclosed. A request for proposal due in the coming months could ask for as many as 189 new generation air refueling aircraft, as opposed to the initial purchase of 100 USAF has previously quoted.

The new numbers were made public by Ralph D. Crosby Jr., chairman and CEO of European Aeronautic Defence and Space Co., North America, one of the contractors vying for the tanker program. Crosby, quoted in the *Seattle Post-Intelligencer,* said the Air Force disclosed the figure in a briefing to his company in early July.

He also said he expected the Air Force to delay release of its RFP until early 2007. The Air Force has said it wants to make a source selection in 2007. (See "Aerospace World: Tanker Competition Launched," June, p. 22.)

In a request for information released in April, the Air Force said it was looking at buying 100 tankers as an initial round of replacement for about 500 aging KC-135 aircraft.

Kenneth J. Krieg, the Pentagon's top weapons buyer, has said the service would buy 15 to 20 tankers a year at full production.

EADS and Northrop Grumman have teamed up to compete a modified version of the Airbus 330 for the tanker requirement, with Northrop as prime contractor.

Boeing is expected to offer its KC-767. A third competitor, Omega Air Refueling, announced plans in June to offer 60 modified DC-10s in an outsourcing plan. (See

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SDBs Are Operational in UK

The Air Force gained a new weapon in July, when the 494th Fighter Squadron at RAF Lakenheath, Britain, went operational with the GBU-39 Small Diameter Bomb.

The 250-pound munition takes advantage of modern precision-attack techniques, allowing targets to be destroyed with a smaller warhead while limiting the danger to adjacent structures and people. As a bonus, strike aircraft can carry more of the weapons, thus increasing the number of individual targets they can attack per sortie.

The weapon became operational during a July 10 training mission. Four F-15E Strike Eagles at Lakenheath were loaded with GBU-39s and scored 16 hits against 16 separate targets on one pass.

"In Operation Desert Storm, you could expect one plane loaded with six bombs to destroy one target. Now, we can use one bomb per target and each aircraft can carry up to 16 bombs," said Lt. Col. Will Reese, 494th Fighter Squadron commander.

The SDBs are about six feet long and are carried on a special rack that holds four on the same station that otherwise could only carry one 1,000-pound or 2,000-pound bomb. After release, the SDB deploys scissors-like wings that can allow it to glide up to nearly 70 miles, depending on the release altitude. The weapon can penetrate reinforced concrete.

USAF photo by SSgt. Angela B. Malek

American civilians bound for the US board a C-17 at Ramstein AB, Germany, on July 23. US forces stationed at Ramstein evacuated these and other American citizens from Lebanon after the outbreak of the war.

Two groups of airmen were trained to operate the GBU-39 bomb by instructors from Ramstein AB, Germany. The newly trained airmen will deploy to Iraq and Afghanistan this month with the new munitions.

Boeing is the prime contractor for the SDB. Under a $1.2 billion contract, it expects to deliver 24,000 SDBs to the Air Force through 2015.

Put Spurs to Long-Range Strike

If the Air Force is to meet its planned in-service date of 2018 for a new long-range strike capability, it will need to nail down its requirements for the new system soon, the Pentagon's top technologist said in July.

John J. Young Jr., Pentagon director of defense research and engineering, was hoping to have the Air Force's requirements for long-range strike in August for inclusion in the Fiscal 2008 program objective memorandum, which lays out the Pentagon's long-range plan for spending. The POM is the foundation of the 2008 defense budget, now being drawn up.

Missing the 2008 POM would cost the Air Force a year or more in developmental funding, Young said.

Young also said he doubts that hypersonic technology will be ready in time to support a system planned for a 2018 operational date, but that it could well be supersonic. He also expressed doubt that the Air Force would go to an unmanned system, due to risk.

Air Force Secretary Michael W. Wynne said earlier this year at AFA's Air Warfare Symposium that it will be "a struggle" to get initial operational capability on the new bomber-like system by 2018.

Network Warfare Is Restructured

Network operations force structure, once a hodgepodge of outfits scattered throughout the Air Force, has been consolidated into a single organization under a single commander.

The new Air Force Network Operations structure aims to streamline the service's approach to network warfare and puts it under the command of 8th Air Force at Barksdale AFB, La. The move unifies computer network defense and offense under AFNETOPS, which provides the capability to US Strategic Command. It also broadens the mission from simply supporting air and space

Modern Air Force Gets a Lightning, Too

The F-35 Joint Strike Fighter has a new nickname: Lightning II. The selection was announced by Air Force Chief of Staff Gen. T. Michael Moseley at ceremonies unveiling the first flight-test model of the airplane at Lockheed Martin's Fort Worth, Tex., plant on July 7. (See "Struggling for Altitude," p. 38.)

The name reflects the heritage of both the US and British Royal Air Forces. It highlights the fact that the airplane has been developed in partnership with Britain. In World War II, the Lockheed P-38 Lightning was the fighter flown by America's two top aces: Maj. Richard I. Bong and Maj. Thomas B. McGuire Jr. One of the Royal Air Force's first supersonic jet fighters was also called the Lightning, and it was made by a forerunner of F-35 industry partner BAE Systems.

The P-38 was notable for its unusual twin-tail configuration; the German Luftwaffe called it "the fork-tailed devil." The F-35 also has two vertical tails. The name is also supposed to evoke the aircraft's speed and its ability to collaborate almost instantly with all elements of coalition air networks.

Moseley picked the name from among six finalists, suggested by the US and national partners, which included Black Mamba, Cyclone, Reaper, Spitfire II, and Piasa. Marine aviator and other interest groups were campaigning for names such as Fury and Phoenix. Moseley got to pick the name because USAF will be the largest customer for the strike fighter.

The name is also a nod to the fact that the P-38 and British Electric Lightning served in a number of foreign air forces. The F-35 is expected to equip the air arms of eight partner countries and as many as 30 more countries that have previously bought the F-16, F/A-18, and AV-8B, which the JSF replaces.

The F-35 Lightning II will be flown by the US Air Force, Navy, and Marine Corps as well as both the Royal Air Force and Royal Navy. Additionally, Australia, Canada, Denmark, Italy, the Netherlands, Norway, and Turkey, as program partners, will be the first countries with a chance to buy the aircraft.

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operations to fighting in cyberspace itself. The changes took effect in July.

The move combines efforts within 10 major commands, the Air Intelligence Agency, and Air Force Communications Agency into the new 67th Network Warfare Wing, headquartered at Lackland AFB, Tex. It used to be the 67th Information Operations Wing.

Reporting to the 67th will be two Integrated Network Operations and Security Centers: one at Langley AFB, Va., and one at Peterson AFB, Colo.

B-52 To Burn Synthetic Gas

Tinker AFB, Okla., received the first shipment of an alternative, synthetic fuel for use in a suitability experiment on a B-52.

In a ground test, the Air Force will run two TF33-P-3/103 turbofans on a B-52 with synthetic gas made from coal. If successful, in-flight testing will follow.

Gen. Bruce Carlson, head of Air Force Materiel Command, said the B-52 was chosen for testing because it has eight turbofan jet engines, offering a high degree of safety in case the test engines lose power. During the tests, two of the power plants will run on the synthetic gas, and the rest will run on conventional fuel.

If the flight tests at Edwards AFB, Calif., go well, the fuel will be tested on other aircraft, possibly the C-135 transport and the T-38 trainer, said Carlson.

The Air Force has recently been working with the Department of Energy to search for alternative sources to decrease DOD's dependence on conventional fuel. The Air Force alone consumes 41 percent of DOD's fuel.

ANG Commands Active Unit

A C-130 unit in Wyoming in July became the first active duty squadron to come under the operational control of the Air National Guard.

The 30th Airlift Squadron is based at Cheyenne Arpt., Wyo. It will operate alongside the Wyoming Air National Guard 153rd Airlift Wing.

The unprecedented move is a new initiative in the evolution of the Total Force. It allows active and Guard personnel to share aircraft and facilities with their reserve counterparts, like the traditional reverse arrangements of past years.

Under Base Realignment and Closure directives, the Guard group will get four more C-130s in spring 2007, bringing its total to 12. The Guard and active duty airmen will jointly operate the dozen theater airlifters.

All airmen will follow their traditional command structures. When the Guard

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The War on Terrorism

Operation Iraqi Freedom—Iraq

Casualties

By Aug. 11, a total of 2,591 Americans had died in Operation Iraqi Freedom. This total includes 2,584 troops and seven Defense Department civilians. Of those fatalities, 2,055 were killed in action by enemy attack, and 536 died in noncombat incidents.

There have been 19,387 troops wounded in action during OIF. This includes 10,547 who returned to duty within 72 hours and 8,840 who were unable to quickly return to action.

Airmen at Ali Base Hand Perimeter Defense to Army

Perimeter defense at Ali Base, Iraq, was handed over to the US Army from the Air Force on June 30.

Airmen with the 407th Expeditionary Security Forces Squadron turned over the mission to the Army's 528th Quartermaster Company after more than three years of protecting the base since it first opened in March 2003.

The turnover took place after USAF determined it would no longer permanently base aircraft at Ali.

Before preparing to leave, the 170 security forces airmen trained 164 soldiers, first in integrated base defense and then in practical scenarios.

The airmen, known as "Desert Hunters," were recognized for their service during a July 1 ceremony. They were awarded the Iraq Campaign Medal.

All 170 airmen are leaving Ali, either to fill security positions around the theater or to go home.

First Iraqi Maintainers Complete Course

Two Iraqi citizens completed the Aircraft and Munitions Maintenance Officers Course at Sheppard AFB, Tex. They are the Iraqi Air Force's first maintenance officers. USAF withheld their names for security reasons.

The two airmen were trained in aerospace ground equipment maintenance, plans and scheduling, jet engine accident investigation, and munitions maintenance.

Operation Enduring Freedom—Afghanistan

Casualties

By Aug. 11, a total of 320 Americans had died in Operation Enduring Freedom, primarily in and around Afghanistan. This total includes 319 troops and one DOD civilian. Of those fatalities, 165 were killed in action by enemy attack and 155 died in nonhostile incidents such as accidents.

A total of 851 troops have been wounded in Enduring Freedom. They include 324 who were able to return to duty in three days and 527 who were not.

Air Force Strikes Taliban Forces

A USAF A-10 Warthog dropped several GBU-12 laser guided bombs near Musah Qal'eh in Afghanistan on July 10, destroying an enemy compound, according to US Central Command Air Forces.

Other A-10s along with British GR-7s provided close air support near Gereshk and Laskar Gah.

On July 11, a USAF B-1B bomber providing close air support near Musah Qal'eh released a GBU-31 Joint Direct Attack Munition on Taliban extremists who were firing small arms and launching rocket propelled grenades at coalition forces. The Taliban attacks stopped after the JDAM was released. French Air Force Mirage 2000s provided close air support for coalition forces.

In another engagement around Musah Qal'eh on July 11, USAF A-10s were at work again, flying close air support with a B-1B Lancer and a Predator drone for coalition forces taking fire from Taliban forces. The enemy insurgents were firing small arms and launching rocket propelled grenades when the A-10s fired cannon rounds and a GBU-12 Paveway II, ending the fight.

Bagram Airmen Drop July 4th Bundles

Airmen from Bagram Airfield, Afghanistan, air dropped Fourth of July bundles to share the holiday with soldiers stationed at remote bases.

A C-130 Hercules dropped 14 containers weighing 1,500 pounds to seven different locations around Afghanistan.

The bundles contained soda, beef jerky, clothing, soccer balls, footballs, CDs, and DVDs requested by the soldiers.

Attached to each bundle was an American flag and a letter from Army Maj. Gen. Benjamin C. Freakley, Combined Joint Task Force-76 commander, thanking the soldiers for their service.

USAF photo by SSgt. Samuel Rogers

SrA. Ryan Rogers marshals in Capt. Matt Bruckner at Langley AFB, Va., on July 28. The 27th, 71st, and 94th Fighter Squadrons flew sorties and participated in exercises around the country while upgrades were done to their home runway.

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USAF photo by SrA. Brian Ferguson

An F-16 of the 421st Expeditionary Fighter Squadron, Balad AB, Iraq, connects with a tanker. Two 421st EFS F-16s recently topped 6,000 flying hours, becoming the second and third Block 40 models to do so. Those two F-16s (no. 88-0471 and no. 88-0482) and the one in this photo normally are assigned to the 388th FW, Hill AFB, Utah.

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is called to state duty by the governor, the active duty airmen will stay behind. If deployed to war, both Guard and active will go as directed by the President.

Academy Demographics Change

The Air Force Academy this year admitted record numbers of women and minorities.

The Class of 2010, numbering 1,352 students, includes 277 women. They account for 20.5 percent of the class.

The minority figure is 317 new cadets, or just over 23 percent. That figure comprises 125 Asian-Americans, 34 Native Americans, 99 Hispanics, and 59 African-Americans. Of the minorities, 72 are women.

The academy received 9,255 applications, with 1,719 appointments offered. Of those accepting appointments, 1,075 were men. In the Class of 2010, 633 cadets are medically qualified to apply for pilot training upon graduation.

The academy also admitted 19 international cadets.

For the first time, the academy enrolled cadets from Iraq and Afghanistan.

Laser JDAM Has Second Success

A laser guided model of the Joint Direct Attack Munition made its second successful test June 30 at Eglin AFB, Fla.

An F-16 released a 500-pound weapon with an inert warhead from 20,000 feet. It scored a direct hit on a moving armored personnel carrier. A third and final test is scheduled for later this year.

Boeing is developing the laser guided JDAM independently. It has no firm orders from the US military yet, but company officials said both the Air Force and Navy have expressed strong interest in the munition. Boeing said it could begin deliveries in 2007.

The weapon adds a laser seeker to the standard satellite guided bomb. If clouds, smoke, or fog block the laser beam before the weapon hits the target, satellite guidance will still allow the bomb to hit with high precision.

Canada Picks C-17, Conditionally

Canada said in July that it has tentatively selected Boeing to supply C-17s for that country's outsize military cargo transport requirement. Canada's Defense Ministry said it doesn't appear that any other company can supply a comparable aircraft within the time needed.

The work would be part of a larger contract worth about $7.3 billion. Besides four C-17s, the deal would include 16 or more CH-47 Chinook helicopters and maintenance for both types of aircraft for 20 years. Canada wants the big transports by the end of 2008 and the helicopters the following year.

The selection was welcome news for Boeing, which is facing the shutdown in 2008 of its Long Beach, Calif., C-17 plant when the Air Force takes delivery of its 180th and last Globemaster III. However, the company is underwriting the building of long-lead parts for 12 C-17s against its bet that foreign operators will want to buy them. Australia has also selected the big airlifter, but between the two orders Boeing has yet to sell out an extra year of production.

GPS Rival Takes a Hit

The business case for Galileo, the European satellite navigation system built to compete with the US Global Positioning System, suffered damage in June, when scientists announced they had cracked the access codes for the planned Galileo constellation.

The development casts doubt on the program. The European Commission was pursuing the system so as not to be dependent on GPS, which the US can turn off or make less accurate. (See "The Sensational Signal," February 2003, p. 66.) The US also does not make its most precise GPS signals available outside the US military. Galileo was touted as offering a higher-quality signal without the complications of military control.

The project was expected to pay for itself by selling access code license fees to companies that would make devices using the more precise Galileo signal. Now that those codes may be available for free, funding for the project could be hard to raise.

Scientists at Cornell University in New York said they had deciphered the

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It's nice to have friends in very high places

In breaking records and crossing oceans, the U.S. Air Force RQ-4 Global Hawk, produced by Northrop Grumman, has shown it can fly higher, farther and stay aloft longer than any unmanned aircraft in the fleet. In addition, it has supported our troops in the Middle East with more than 5,400 combat hours flown. Rolls-Royce is proud to be a member of the Industry Team that supports this amazing UAV. From its first flight to surveillance in the skies above Southwest Asia, the Rolls-Royce F137-RR-100 turbofan engine has provided Global Hawk with constant, reliable power for its most extreme and unique missions. What the world's most sophisticated UAV does at over 60,000 feet is serious business to the warfighter on the ground. At Rolls-Royce, our business is making sure it has the power to get there and back. **Trusted to deliver excellence**

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access codes for Galileo using a rooftop satellite dish and signal processing techniques.

The European Commission said it would change the access codes, but the Cornell scientists said anyone could use their method to crack them.

Galileo is supposed to be operational by 2010.

Lockheed Will Miss Raptor Bonus

The Air Force will withhold from Lockheed Martin up to $57 million in award fees on the F-22 project. The funds will pay for inspections of 73 Raptors believed to have flaws.

Cracks on the Raptor's titanium booms were discovered during fatigue testing. The Air Force said they were a result of improper heat treatment. The repairs are estimated to cost $100 million. (See "Aerospace World: F-22A Fix Pegged at $100 Million," July, p. 24.)

Due to the flaw, the Air Force decided to withhold funds that would have been given as a bonus, had Lockheed Martin met all contract requirements.

The Air Force plans to withhold $250,000 to $1.2 million per airplane.

The problem will not affect the overall Raptor program, nor will it affect the service life or safety of the fighter aircraft, according to Lockheed Martin.

USAF Agencies Swap Officials

Air Force Space Command and the National Reconnaissance Office are swapping two high-ranking officials in a move to foster closer coordination.

USAF announced in July that Maj. Gen. John T. Sheridan will become deputy director at the NRO, which will then send a top-ranking civilian official to Space Command.

AFSPC and the NRO want to develop a plan to train space experts and create tactics to protect US satellites from foreign attack, and find ways to change acquisition processes.

Gripens Fly at Cope Thunder

Swedish JAS-39 Gripen fighters participated in the Pacific Air Forces exercise Cooperative Cope Thunder in Alaska from July 20 to Aug. 5. It marked the first time the Swedish Air Force has participated in an exercise in the United States.

Seven Gripens arrived at Eielson Air Force Base July 17 for the exercise, accompanied by 23 technicians aboard two Swedish C-130s. The Swedish Air Force is using the exercise to gain experience with long-distance deployments. They traveled 6,324 miles from their home base to get to Eielson.

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Senior Staff Changes

RETIREMENTS: Lt. Gen. Michael M. **Dunn,** Maj. Gen. Gregory H. **Power.**

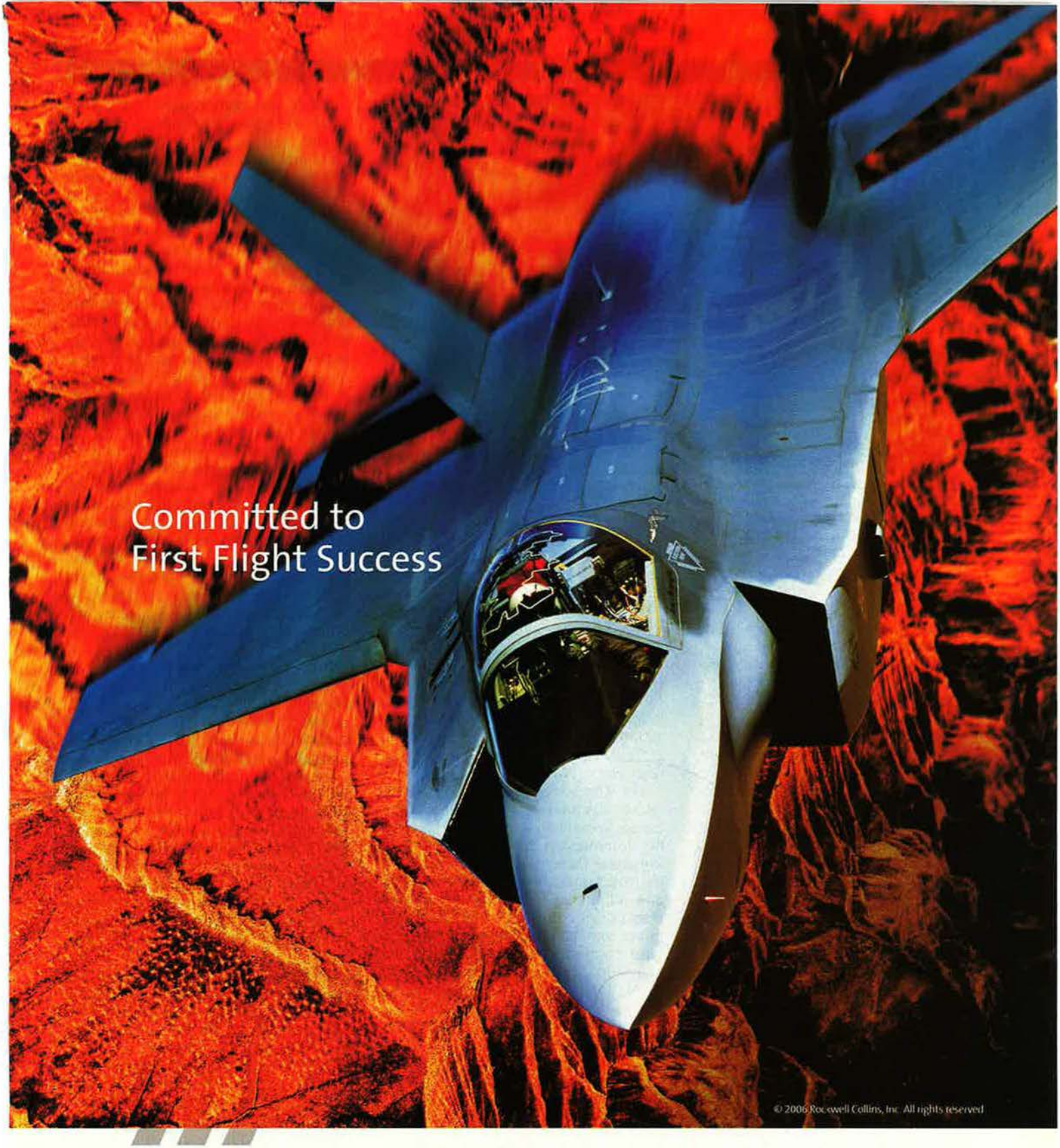
CHANGES: Maj. Gen. Philip M. **Breedlove,** from Vice Cmdr., 16th AF, USAFE, Ramstein AB, Germany, to Vice Dir., Jt. Staff, Pentagon ... Brig. Gen. Charles R. **Davis,** from Dep. Dir., JSF Prgm., Office of USD for Acq., Tech., & Log., Pentagon, to Dir., JSF Prgm., Office of USD for Acq., Tech., & Log., Pentagon ... Brig. Gen. Richard T. **Devereaux,** from Dir., Regional Affairs, Office of the Dep. Undersecy. of the AF (Intl. Affairs), USAF, Pentagon, to Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex. ... Maj. Gen. Stephen M. **Goldfein,** from Cmdr., USAF Warfare Center, ACC, Nellis AFB, Nev., to Vice Cmdr., ACC, Langley AFB, Va. .. Brig. Gen. Ralph J. **Jodice II,** from US Defense Attache (PACOM), DIA, Beijing, China, to Dir., Regional Affairs, Office of the Dep. Undersecy. of the AF (Intl. Affairs), Pentagon ... Maj. Gen. (sel.) Ronald R. **Ladnier,** from Dir., Resource Integration, DCS, Log., Instl., & Mission Spt., USAF, Pentagon, to Vice Cmdr., Tanker Airlift Control Center, AMC, Scott AFB, Ill. ... Brig. Gen. Donald **Lustig,** from Vice Cmdr., Tanker Airlift Control Center, AMC, Scott AFB, Ill., to IG, AMC, Scott AFB, Ill. ... Brig. Gen. (sel.) Michael R. **Moeller,** from Dep. Dir., P&P, ACC, Langley AFB, Va., to Dir., Strat. Policy & Plans, SOUTHCOM, Miami ... Maj. Gen. (sel.) Douglas L. **Raaberg,** from Dep. Dir., Ops., CENTCOM, MacDill AFB, Fla., to Dir., Air & Space Ops., ACC, Langley AFB, Va. ... Maj. Gen. John T. **Sheridan,** from PEO & Sys. Prgm. Dir., Space Radar, Office of the Undersecy. of the AF, Chantilly, Va., to Dep. Dir., NRO, Chantilly, Va. ... Brig. Gen. (sel.) William W. **Uhle Jr.,** from Chief, House Liaison Office, OSAF, Pentagon, to Cmdr., Air Ops. Center, USAFE, Ramstein AB, Germany ... Brig. Gen. James A. **Whitmore,** from Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex., to Dir., Ops. & Spt. Integration, Warfighting Integration & Chief Info. Officer, OSAF, Pentagon ... Brig. Gen. Janet C. **Wolfenbarger,** from Dir., Acq. Center of Excellence, Office of the Asst. Secy. of the AF (Acq.), Pentagon, to Spec. Asst. to the Cmdr., AFMC for Command Transformation, AFMC, Wright-Patterson AFB, Ohio ... Maj. Gen. R. Mike **Worden,** from Dir., Operational Plans & Jt. Matters, DCS, Air, Space, & Info. Ops., P&R, USAF, Pentagon, to Cmdr., USAF Warfare Center, ACC, Nellis AFB, Nev.

SENIOR EXECUTIVE STAFF RETIREMENT: Forrest J. **Agee.**

SES CHANGES: Gerald L. **Freisthler,** to Dir., Engineering & Technical Mgmt., ASC, AFMC, Wright-Patterson AFB, Ohio ... Robert J. **Goodwin,** to Dep. Asst. Secy. (Force Mgmt. Integration), Pentagon ... David A. **Hardy,** to Assoc. Dir., Space Tech., AFRL, AFMC, Kirtland AFB, N.M. ... Deryl W. **Israel,** to Dir., Engineering & Acq. Excellence, Air Armament Center, AFMC, Eglin AFB, Fla. ... Thomas P. **Russell,** to Dir., Aerospace & Materials Sciences, AF Office of Scientific Research, AFRL, AFMC, Washington, D.C. ... L. Bruce **Simpson,** to Dir., 308th Armament Systems Wg., AFMC, Eglin AFB, Fla. ■

USAF photo by Airman Christopher Griffin

One of only five enlisted female snipers in the Air Force, A1C Kristin Ferris, of the 354th Security Forces Squadron, positions herself in the brush during an exercise at Eielson AFB, Alaska, on Aug. 8. Ferris was participating in the training exercise that aimed to duplicate a terrorist hostage-taking.



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USAF photo by MSgt. Robert A. Whitehead

Army Pfc. Dave Grever shows Air Force TSgt. Cindy Beard how to shoot an azimuth during a mock combat search and rescue operation in Patriot 2006. The joint exercise is sponsored by the National Guard.

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More than 600 US service members and 200 foreign military personnel from Australia, Canada, Germany, Japan, Mongolia, Slovakia, South Korea, and Sweden participated in the event.

The US also expected to host observers from Bangladesh, Malaysia, Mexico, Russia, and Sri Lanka.

Convoy Drivers Get New Trainer

The Air Force now has a permanent, virtual, combat-convoy trainer at Camp Bullis, Tex., where airmen train for convoy duty.

Training at Camp Bullis has picked up in the last couple of years as airmen are increasingly tapped to take over convoy driving and escort missions from US Army troops in Iraq.

The new device, called the Virtual Combat Convoy Trainer, is a fixed-site simulator. Previous trainers were delivered to the Army and Marine Corps and are kept in mobile trailers for easy transportation.

The VCCT is a simulator made up of a full-scale Humvee with visual, audio, and weapons systems to replicate combat scenarios in Iraq and Afghanistan.

Lockheed Martin first developed the VCCT in 2004 and has since fielded 23 systems.

Hall of Fame Inducts Hill, White

The National Aviation Hall of Fame inducted four new "legends of aviation," including Flying Tiger Brig. Gen. David L. "Tex" Hill and Air Force test pilot Maj. Gen. Robert M. White.

Hill, who was born in Korea in 1915 to missionary parents, started his aviation career in the Navy, but in 1941 resigned his commission to join the American Volunteer Group Flying Tigers, becoming the famed fliers' second leading ace. When the US Army Air Forces incorporated the AVG, Hill became a major with the 23rd Fighter Group and later commanded the group. He left active duty in 1946, entering the Texas Air National Guard, where he became the youngest one-star general in the history of the Air Guard. (See "Tex," July 2002, p. 81.)

White was born in New York City in 1924 and entered the AAF in 1942 as an aviation cadet, flying P-51s over Germany. Between wars, he earned an electrical engineering degree while serving in the Reserve and returned to active duty during the Korean War. White then became an Air Force test pilot at Edwards AFB, Calif., where he flew the F-86, F-89, F-102, F-105, and ultimately the X-15. He became the first man to fly a winged aircraft six times faster than the speed of sound and, in July 1962, flew to 59.6 miles above earth, earning an astronaut rating. White flew 70 combat missions in the Vietnam War. (See "Valor: A Place Called the Doumer Bridge," February 1988.) Following the war, he helped guide development of the F-15 and oversaw flight testing of the A-10 and the F-15, among other aircraft.

The other two aviation legends inducted into the hall this year were Bessie Coleman, the first American civilian of color to earn a pilot's license, and actor Cliff Robertson, who has won numerous awards for his advocacy of aviation and organization of relief flights into civil war-torn Nigeria in 1969 and famine-plagued Ethiopia in 1978.

NORTHCOM Watched Missiles

US Northern Command was watching closely when North Korea salvoed a half-dozen missiles in unannounced July 4 tests and was ready with interceptors if necessary, NORTHCOM officials said.

The North Korean test was a failure for the Taepo Dong 2, which is said to have an intercontinental range and to be capable of reaching the western US. The missile's first stage failed 42 seconds into flight, and the vehicle splashed into the Sea of Japan.

The Ground-based Midcourse Defense System interceptors at Ft. Greely, Alaska, and Vandenberg AFB, Calif., were operational throughout all the launches, NORTHCOM officials said. The command was able to "determine quickly that the launch posed no threat to the United States or its territories," according to a NORTHCOM statement.

NORTHCOM personnel were monitoring the missiles from command headquarters in Colorado Springs, Colo.

The other missiles fired by North Korea—including a seventh on July 5—appeared to be a mix of short-range Scud-C missiles and intermediate-range Nodong missiles, all of which fell into the Sea of Japan. None appeared to be armed with a warhead.

The six missiles were fired from a base in Kittaeryong, on the southern part of North Korea's east coast. The Taepo Dong 2 was launched from northeast North Korea. ■

Missing World War II Airmen Identified

The remains of nine airmen carried as missing in action since World War II were identified, the Defense Department announced in late June. They are: Cpl. John A. DeCarlo, Newark, N.J.; 2nd Lt. John F. Green, Watertown, N.Y.; 2nd Lt. Hugh L. Johnson Jr., Montgomery, Ala.; SSgt. Walter Knudsen, Sioux City, Iowa; 2nd Lt. John M. Meisner, Pembroke, Mass.; Cpl. William G. Mohr, Mount Wolf, Pa.; Cpl. Michael J. Puskar, Mahanoy City, Pa.; Cpl. Robert E. Raney, Monon, Ind; and 2nd Lt. Byron L. Stenen, Northridge, Calif.

The airmen took off on the morning of Oct. 9, 1944 in a B-24 Liberator to fly a training mission from New Guinea. The aircraft was never seen again, and officials speculated that the crew ran into bad weather. In 2002, US officials learned that villagers in Morobe Province, New Guinea, had found two dog tags and launched an investigation.

News Notes

■ Army Gen. Bantz J. Craddock was nominated by President Bush to become Supreme Allied Commander, Europe, and head of US European Command. Craddock has served as chief of US Southern Command since November 2004. Craddock will replace Marine Gen. James L. Jones in the European post, barring any delays in his Senate confirmation.

■ Lt. Col. Glenn Rattell received the Bronze Star in June for actions under fire in Iraq. Rattell was cited for leading more than 1,000 troops in survival and recovery operations while coming under more than 50 Iraqi insurgent attacks. It was the most violent period in Iraq since the start of the war in 2003. Rattell served as deputy commander of the 506th Air Expeditionary Group at Kirkuk Regional AB, Iraq, from Sept. 1, 2005 to Jan. 24, 2006.

■ The second flight-test F135 engine for the Joint Strike Fighter was delivered to Lockheed Martin's Fort Worth, Tex., facility. The engine is the second of three that will support the F-35's first flights, scheduled for the next few months. The JSF test engines have logged 9,000 hours of demonstration ground and flight testing.

■ An MC-130W, the newest C-130 variant, was delivered to Air Force Special Operations Command on June 28 at Warner Robins Air Logistics Center in Georgia. Originally built as a C-130H2 transport, the aircraft was modified to handle helicopter refueling and low-level missions. A dozen MC-130Ws are slated to be based with a new, as yet unnamed, squadron located at Cannon AFB, N.M.

■ The US and Kyrgyz governments officially signed a basing agreement on July 14 for an unspecified amount of money, giving the US military the green light to continue using Manas Air Base to support operations in Afghanistan. Kyrgyzstan threatened in February to evict American forces if the US didn't pay more than $200 million in rent.

■ The Air Force announced the 2005 combat rescue officer and pararescuemen of the year in July. They are: Capt. Jose L. Cabrera from Moody AFB, Ga., MSgt. Douglas Issacks from Lackland AFB, Tex., TSgt. Steven M. Young from Pope AFB, NC., and SrA. Luis Garcia from Kadena AB, Japan. The airmen will receive their awards during the pararescue association reunion banquet Sept. 15 in Las Vegas.

■ The C-17's engine, the Pratt and Whitney F117, logged its four millionth flight hour aboard the cargo aircraft in July. The F117 engine began USAF service in September 1991, powering the Globemaster III, which is used for airlift and mobility missions by USAF and the British Royal Air Force.

■ In July, Pacific Air Forces was awarded the Maj. Gen. Benjamin D. Foulois Memorial Award for flight safety. PACAF had a perfect safety record with no destroyed aircraft or aircrew deaths in 2005. It also reached the Secretary of Defense's goal of a 50 percent decrease in major aviation mishaps for the second year running.

■ Lt. Col. Jeff Roetzel, with the 9th Expeditionary Bomb Squadron, is the first pilot to log 4,000 flying hours in the B-1B bomber, a milestone recently achieved during an Operation Enduring Freedom combat mission. During his 20-year flying career, Roetzel has racked up 7,500 total flying hours with the Air Force, Air National Guard, and civilian airlines. He planned to retire from the Air Force in the fall.

■ UFC Aerospace Corp., Bay Shore, N.Y., was awarded a $100 million contract for modification kits for 1,200 USAF F-16s as well as foreign military sales customers. Kits will include structural parts such as aircraft bulkheads and leading edge flaps. Work is scheduled to be completed by September 2014.

■ Aviano AB, Italy, was hit by a heavy storm in June, with winds gusts recorded at 94 mph—the highest ever measured at the base—causing an estimated $3.5 million in damage. The tail and rotor sections of a Black Hawk helicopter were damaged, and cars and infrastructure destroyed. Only minor injuries were reported, with no fatalities.

■ Eglin AFB, Fla., was recognized as the 2005 Complex of the Year in July, for maintaining the most complex airspace and airfield with many runways and moving parts. Eglin supports five million square yards of pavement used by six wings, five major commands, six civilian airlines, and the Army and Navy.

■ Northrop Grumman's new Unmanned Systems Center in Moss Point, Miss., began assembling the plant's first Global Hawk unmanned aerial vehicle on schedule, despite damage to the facility caused by Hurricane Katrina. The Global Hawk fuselage is being assembled at the plant and then will be shipped to Palmdale, Calif., for the final assembly and testing. ■

USAF photo by SSgt. Andrea Knudson

An upgraded U-2S aircraft arrived at Osan AB, South Korea, in June. The U-2 features an advanced cockpit with larger displays and easier readability. Pilots can configure the new displays in different layouts, tailoring them to individual needs.

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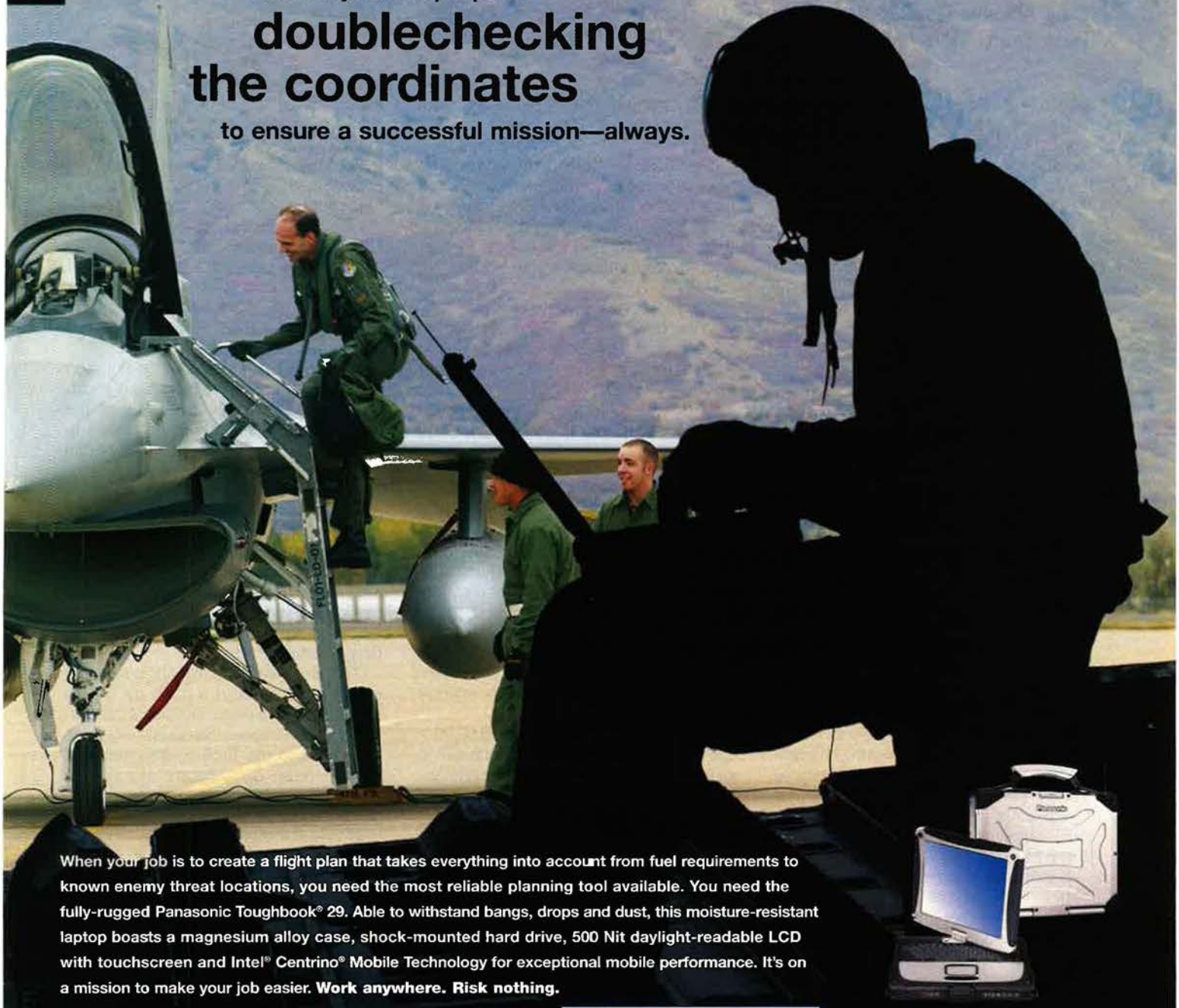

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Action in Congress

By Tom Philpott, Contributing Editor

Stop Abusive Lending Practices; Battle Over Drug Costs; Personal Data Theft; More on Reserve Tricare ....

VA Case Backlog

Retired judges from the Court of Appeals for Veterans Claims should be reinstated to handle a worrisome backlog of claims cases, says the Senate Veterans' Affairs Committee.

The case backlog at the appeals court, which Congress created in 1989 specifically to handle veterans' cases, has doubled in two years, reaching an "unacceptable" level, said Sen. Larry E. Craig (R-Idaho), committee chairman.

"Veterans deserve it and Congress demands it" said Craig, calling for swifter decisions on appeals.

In 2004, the claims court had 2,700 cases pending, most involving disability compensation. Fewer than 200 new cases were arriving each month. Today, the backlog surpasses 5,800—with 300 new cases arriving monthly.

Chief Judge William P. Greene said in July that the court is weighing the possibility of recalling retired judges.

Greene said the court now has seven active judges, the most in six years, so he has "every expectation that we will continue an upward trend" in clearing cases.

Tricare Reserve Select

Any drilling Guard or Reserve member now can buy Tricare health coverage under a triple-tiered Tricare Reserve Select (TRS) program. Defense officials have announced details of the TRS enrollment process for the new Tiers 2 and 3.

Except for the premiums, the TRS benefit is similar to Tricare Standard. Enrollees pay annual deductibles and a 20 percent co-payment for inpatient and outpatient care. Drug co-pays in the Tricare network are $3 for generic and $9 for brand-name drugs. The ceiling on total out-of-pocket costs is set at $1,000.

Covered members and families can get care from any Tricare-authorized civilian provider, hospital, or pharmacy. They can access care in a military treatment facility on a space-available basis only.

An open season to enroll in Tiers 2 and 3 began in August and ends Nov. 25.

Tier 2 is available to drilling members who lack employer-sponsored health care including those self-employed. Premiums cover 50 percent of plan costs.

Tier 3 is for drilling members who have access to employer-sponsored health care but prefer TRS. Premiums cover 85 percent of program costs.

More information is at: www.tricare.osd.mil/reserve/reserveselect.

Medical Recruiting Incentives

With only the Air Force attracting enough prospective doctors to its Health Professions Scholarship Program to sustain the next generation of military doctors, Congress is considering increased medical bonuses and stipends.

An incentive package approved by the Senate would:

- Double, to $30,000 a year, the stipend for HPSP scholarships.
- Increase to $60,000, from $22,000, the maximum student loan repayment, to entice more medical and dental school graduates into service.
- Increase to $45,000, from $15,000, the maximum annual grants for doctors who choose to complete residency training in the civilian sector before military service.
- Increase to $25,000, from $10,000, the amount of special pay offered to selected reserve health professionals trained in critically short wartime specialties.
- Enhance dental accession bonus authority. Dentists currently are offered an accession bonus of up to $30,000. That would be raised to $200,000—recognizing that dentists' salaries in the private sector have increased.
- Allow a new accession bonus of up to $400,000 for physicians and dentists in war-critical specialties. Enticed from civilian life, the doctors would promise to serve at least four years. Specialists who might qualify include maxillofacial surgeons, thoracic surgeons, and orthopedic surgeons.

The House version of the 2007 defense authorization bill had not endorsed most of these adjustments.

Preserving the Pipeline

The services recruit 70 percent of their physicians and 80 percent of dentists through HPSP. The program covers tuition in civilian medical schools plus books and fees and pays a monthly stipend of $1,289. In return, students agree that for every year of schooling provided, they will serve a year as a military physician or dentist.

Every service had been meeting HPSP goals until Fiscal 2005 when the Navy fell 44 percent short of the 291 medical students it had hoped to sign. Numbers for 2006 have not improved.

The Army in 2005 expected to award 307 scholarships. It fell 70 short.

Lt. Gen. Kevin C. Kiley, Army surgeon general, said this isn't causing a shortage of doctors now because of the years-long training pipeline it takes to turn medical students into deployable doctors.

The Air Force is exceeding its HPSP goals. An official credited expeditionary rotations, which limit combat assignments for medical and dental officers to predictable four-month tours. Applicants also hear that the Air Force offers a higher quality of life.

Drug Rebate Battle

The Bush Administration is sending mixed signals about a push by Tricare officials to force pharmaceutical companies to provide deep discounts on drugs dispensed in the Tricare retail network.

High retail drug prices are adding about $260 million a year to Tricare budgets, according to Capitol Hill, Pentagon, and industry sources.

Lawyers for the Department of Veterans Affairs and DOD agreed in 2004 that the Veterans Health Care Act of 1992 directs drug manufacturers to grant discounts on all drugs supplied to DOD, VA, the Public Health Service, and the Coast Guard. The discounts already are provided on drugs dispensed through military pharmacies or the Tricare Mail Order Program. The discounts, which come in the form of rebates, lower drug costs by 30 to 40 percent.

Last year, defense officials told drug manufacturers that new Tricare contracts will assume that the rebates also apply to the retail network, and the department would budget accordingly. That announcement spurred the pharmaceutical companies to file a lawsuit against the department's plan. A decision is pending.

William Winkenwerder Jr., assistant secretary of defense for health affairs, asked for legislative help in April. He said drugmakers already owed rebates to Tricare worth more than $450 million—and the tab is rising.

But Winkenwerder has stopped touting a supportive Senate provision. Asked to comment on it in June, he said, "The Administration does not have a position either in favor of or against that particular provision."

Protecting Vets' Credit

The VA scrapped a $160 million program to provide free credit monitoring for 26.5 million veterans after authorities recovered a laptop computer and external hard drive containing veterans' names and personal data.

In a letter to House Speaker J. Dennis Hastert, White House budget director Robert J. Portman said he was canceling the Administration's special request to fund a year of free credit monitoring for veterans.

Portman said the FBI had a "high degree of confidence" that information stored on the stolen computer equipment had not been accessed since the theft.

The equipment had been stolen from the home of a VA analyst. (See "The Laptop Scandal," p. 86.)

VA Secretary R. James Nicholson told the Senate Veterans' Affairs Committee in July that the VA will hire a leading data analysis company to ensure the information is not being used to abuse veterans' credit or steal their identities.

Payday Lenders Under Fire

The Senate's defense authorization bill contains language to cap interest rates charged by "payday" lenders who profit from military families who are living paycheck-to-paycheck or spending beyond their means.

The amendment, from Sen. Bill Nelson (D-Fla.) and Sen. Jim Talent (R-Mo.), would strengthen protections for service personnel from abusive lending practices.

Critics of payday loans say annual interest rates as high as 800 percent create such debt for service members or their spouses that they lower morale and threaten unit readiness.

The Navy-Marine Corps Relief Society estimates that military families pay an estimated $80 million annually in payday loan fees. The Senate measure would block lenders from charging military personnel interest rates higher than an annual rate of 36 percent.

"We have to step in and stop these predatory lenders from making a quick buck at the expense of the livelihood and future of those defending our freedom," Talent said. ■

Verbatim

By John T. Correll, Contributing Editor

Serving Suggestion

"They taste better if you haven't eaten for a few days and you are under extreme stress."—***Jess Soto, Vietnam veteran now working at the Pentagon, on the new Meal, Ready to Eat (MRE), introduced in June,*** **Los Angeles Times,** ***June 15.***

Might Be a Connection

"Increased demands on the acquisition workforce have led to vulnerabilities in contract pricing and competition and in the selection of the most appropriate contracting techniques."—***Government Accountability Office on performance of Pentagon acquisition workforce, which was cut by 38 percent between 1989 and 2002,*** **Washington Post,** ***July 11.***

The Man Who

"Sadly, America has yet to hold Donald Rumsfeld accountable for his poor judgment and failed decision-making. He alone is responsible for setting America up for the prolonged challenge we now face as we continue to plug away in Iraq and Afghanistan well into our fourth year."—***Retired Army Maj. Gen. John R.S. Batiste, former commander of 1st Infantry Division in Iraq, also formerly senior military assistant to then-Deputy Secretary of Defense Paul Wolfowitz,*** **San Diego Union-Tribune,** ***July 6.***

Kay's Take on Tenet

"I think it is true that George Tenet wanted to be a player. And he understood that if you didn't give the policymakers what they wanted, he believed, I think wrongly, that you weren't a player, and therefore your views wouldn't be taken and you wouldn't be invited into the closed meetings, etc. He traded integrity for access."—***David Kay, former Iraq weapons inspector on CIA director Tenet's advice to the President that evidence of Iraqi weapons of mass destruction was a "slam dunk," PBS "Frontline" documentary, June 20.***

Green Machine Sees the Light

"It was always about 85-90 percent of hands that showed support for the Army blue uniform."—***Sergeant Major of the Army Kenneth O. Preston on soldiers' preferences prior to Army decision to eliminate the green uniform worn for more than 100 years and switch to blue, Bloomberg, June 15.***

Not His Area

"I don't do this business. That is not what I do. There are all kinds of senior people in this department who do it. ... I have got 50 million things on my desk and that isn't one of them."—***Secretary of Defense Donald H. Rumsfeld on criticism that he has paid insufficient attention to management of acquisition programs,*** **Washington Post,** ***June 20.***

Threat Behind the Threat

"Americans need to stop thinking parochially and selfishly and start thinking strategically. North Korea does not have to be able to hit the United States with meaningful nuclear threats to do much to deter or damage American interests."—***Anthony H. Cordesman, Center for Strategic and International Studies,*** **San Diego Union-Tribune,** ***July 9.***

More Where Those Came From

"Every time you bring one dead, you will find 20 more volunteers willing to join the fighting."—***Hafiz Ihsanullah, Taliban recruiter in Pakistan, London*** **Sunday Telegraph,** ***July 2.***

Antiairpower Artillery

"The Air Force has become a force that is marketing flawed ideas that harm our defense."—***Army Col. H.R. McMaster, respected author of*** **Dereliction of Duty** ***(1997), ending his tour as commander of a regiment in Iraq and joining the "Boots on the Ground" attack on the Air Force,*** **Colorado Springs Gazette,** ***June 29.***

Not Center of GWOT

"Iraq is not the center of the Global War on Terrorism, nor is it overwhelmed by foreign terrorist groups, as this Administration would like Americans to believe. Iraqis are fighting Iraqis in sectarian violence, and US troops have become the target."—***Rep. John Murtha of Pennsylvania, top Democrat on House Defense Appropriations Subcommittee, signed column,*** **USA Today,** ***June 16.***

Radio Games End

"What we found was when our single-channel, local AFN radio station switched from music to a sports event, more than half the audience left. Music is what they're looking to be entertained with. When they can't find music, they'll go to their iPods or CDs or computers."—***Robert Matheson, director of American Forces Network broadcasting in Riverside, Calif., as AFN announces plans to drop play-by-play radio broadcasts of sports events,*** **Baltimore Sun,** ***July 7.***

Truth in Labeling

"I am a liar. I am not a marine."—***Sandwich board sign worn by William C. Horvath in Missoula, Mont., on orders of a district judge after Horvath lied to his probation officer about having served in the military,*** **Los Angeles Times,** ***July 8.***

It Will Get Worse

"The threat from Iran is only going to grow in the years ahead. We need to take steps now to prepare to deal with that threat."—***Senate Majority Leader Bill Frist (R-Tenn.) on need to put interceptor missiles in Europe to defend against potential attacks from Iran,*** **Miami Herald,** ***July 1.***

Space Shooters

"Why not pursue space weapons? The most compelling reason is that they would actually make the situation worse. This is due to the technical ease of ground-based antisatellite systems. Adversaries wouldn't need to go to the trouble of building space-based weapons systems. Simple and inexpensive, ground-based systems could shoot these satellites out of the sky. More than 25 nations already have the missile capability to reach the altitude at which the satellites orbit. More significantly, powerful lasers able to kill a satellite in low orbit through heating are available commercially in more than 50 nations. If the United States deploys ground-based antisatellite technology, or ASATs (which it can do technically now), then others will follow suit. America has the most assets in orbit to lose in such a game."—***William Marshall, Space Policy Institute of George Washington University,*** **Boston Globe,** ***July 5.***

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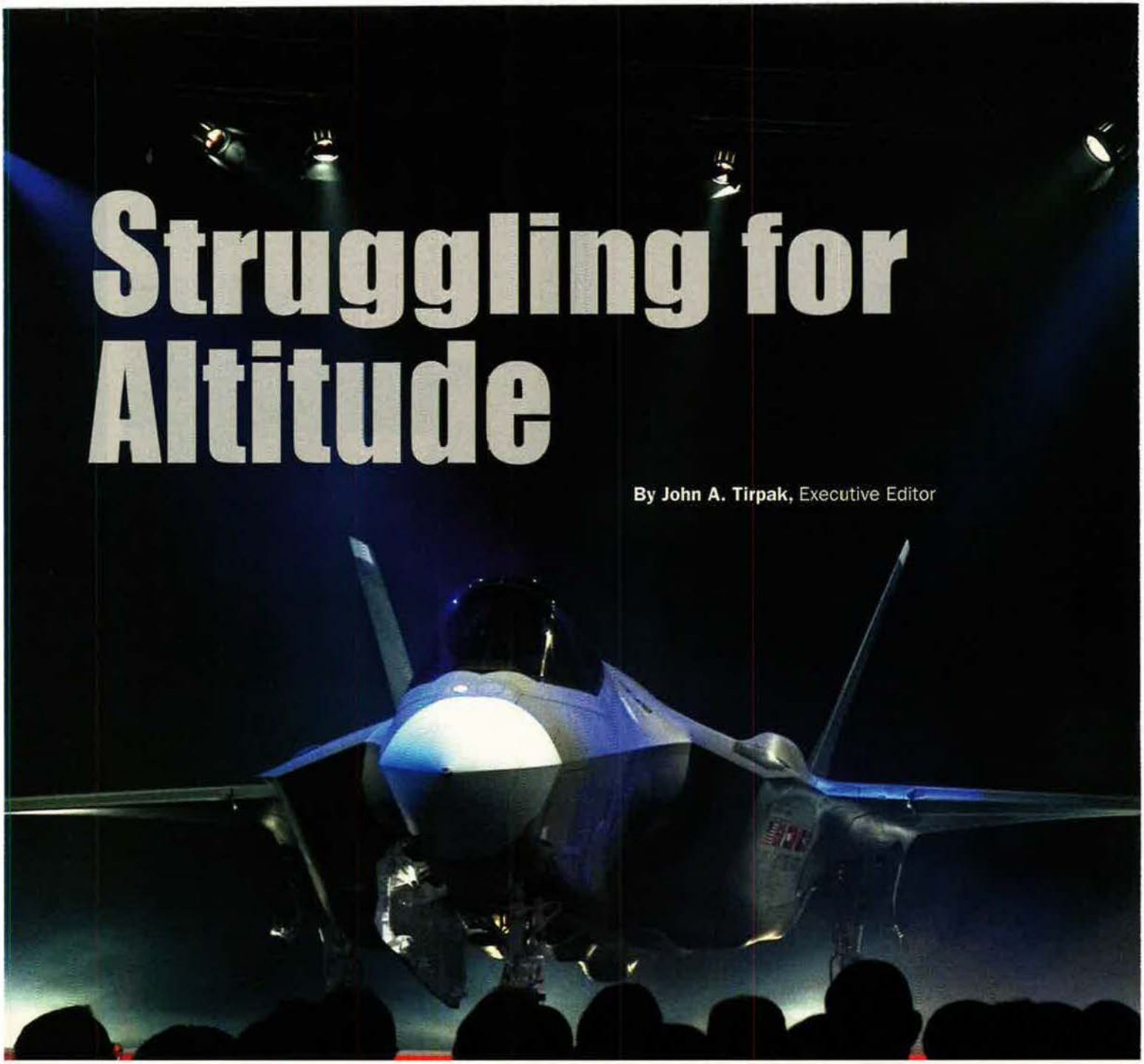
Struggling for Altitude

By John A. Tirpak, Executive Editor



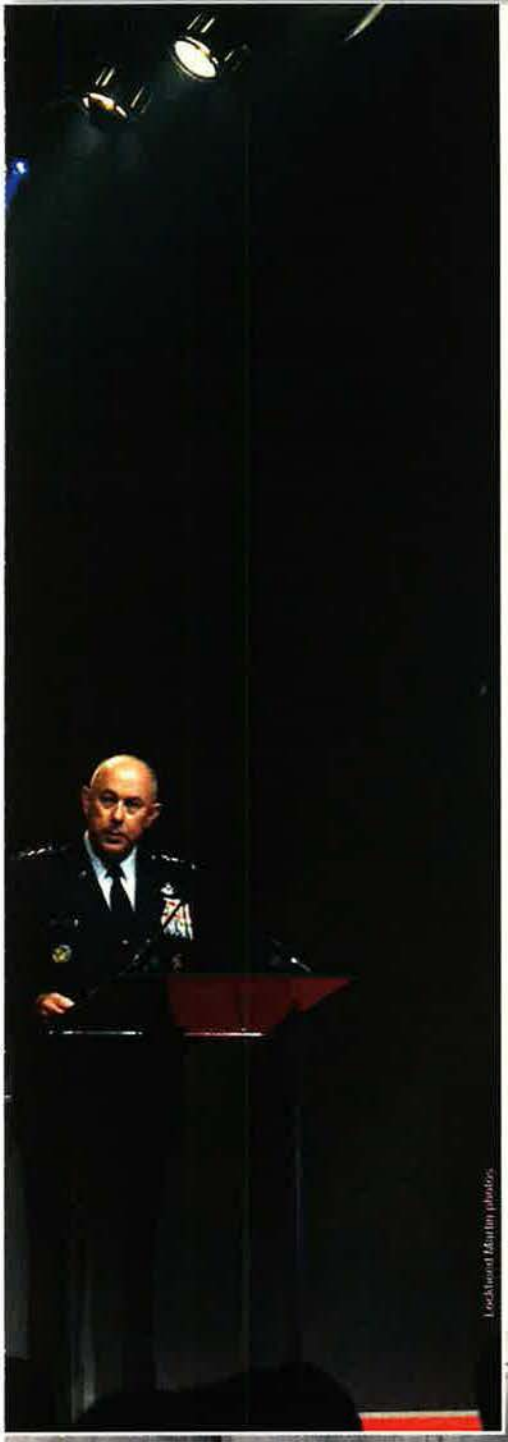
The F-35 Lightning II looks like a big winner, but sudden nervousness in Washington could spell big problems.

By all accounts, the F-35 Lightning II will be a stellar airplane, easily able to defeat any enemy fighter or air defense system it meets. The program is on track, and there's little doubt the Air Force and its sister services need such an aircraft to modernize their aging fighter inventories. Allies are lining up to buy the fighter.

The F-35 is imperiled by no weapon, technical weakness, or impossible requirement. Rather, the largest threat to the new fighter seems to be a major case of nerves. Government officials are daunted by the size, scope, and cost of the program and all that is riding on it.

At an estimated cost of well over $200 billion—just for American development and production—the tri-service Joint Strike Fighter is the

Gen. T. Michael Moseley, Air Force Chief of Staff, unveils the first flight-test F-35 in a June ceremony in Ft. Worth, Tex.



most expensive fighter project ever undertaken. That fact alone makes it the object of intense scrutiny.

The danger is that excessive caution born of such close scrutiny could quickly wipe out one of the new fighter's greatest selling points: its relatively low unit cost. Already, urgent calls to ease up and throttle back are spewing forth from the usual sources.

In March, the Government Accountability Office predictably pointed out that the F-35 will be well into production before Pentagon officials complete its testing. GAO warned there could be expensive surprises ahead if the aircraft doesn't perform as expected. Slow down, it said. "Fly before buy" should be the watchword.

In direct response to these kinds of alarms, the Senate chopped $1.2 billion in strike fighter money from the Fiscal 2007 authorization bill, now in conference on Capitol Hill. House committees have called for cuts of lesser magnitude. Plans to move the F-35 into low-rate production are in abeyance, with the final determination awaiting the outcome of House-Senate negotiations.

Same Old Saw

GAO has issued the same "fly before buy" exhortations for most aircraft projects for the last 25 years. Methods used to develop fighter aircraft have evolved, however, so much so that any appreciable production slowdown could do grave damage to the F-35 program as it is now structured, according to those with direct experience running it.

"Everybody wants to slow us down," Rear Adm. Steven L. Enewold said this summer. Enewold was program executive officer fom June 2004 until July 2006, when he moved on to become the vice commander of Naval Air Systems Command.

"Fundamentally, if you slow us down, it's going to cost more money," Enewold explained. "And then, you get into the whole 'Can you afford it?' and 'Should you afford it?' discussion, which, up to this point, we haven't had to do."

The program has built up considerable momentum. The first flight-test aircraft are in various stages of production, and vendors for parts and subassemblies are gearing up. First flight is expected in November. Slowing down now would kill momentum, dissipate learning curve benefits, and force higher overhead costs, according to Daniel J. Crowley, JSF general manager for prime contractor Lockheed Martin.

"If we slow down," warned Crowley, "we will have higher costs out of our suppliers, we have lost opportunities on learning, and that becomes a death spiral—in that costs go up, budget available to buy aircraft remains the same, so you buy fewer, and then costs go up again."

Under the system development and demonstration phase, the program will be producing 22 aircraft—15 for flight test and seven for ground test.

"We'll be building at a real clip" in the run-up to low-rate initial production, Crowley noted. Stopping or

Lockheed Martin photos

A touch-screen display can be customized for any phase of the F-35 mission or for pilot preference. This, along with a helmet-mounted display, gives the F-35 pilot the best situational awareness ever offered in a fighter.

sharply slowing at that point—as GAO suggests—would force Lockheed Martin to keep large numbers of personnel, a factory, and hundreds of subcontractors idling with the meter running while flight testing progresses.

Crowley argued that GAO's objection to the program as laid out—too much concurrency in development, flight tests, and production—seems to stem from the experience with programs such as the F-15 and F-16, developed in the 1970s and built in large numbers in the 1980s and small lots thereafter. Since then, industry has made huge advances in computer modeling and simulation, computer-aided design, and lean manufacturing techniques. The F-35 bears no resemblance to these older fighter programs.

"They [GAO auditors] don't have a detailed knowledge of how JSF acquisition was structured and the risk retirement that we built into the plan," Crowley asserted. The first flying F-35 (dubbed "AA-1") used major parts and subassemblies built on three different continents, yet they meshed together better than fighters built on "mature" production lines. As a matter of fact, the first fuel test yielded no leaks whatsoever—a fighter development first.

Seeking Low Risk

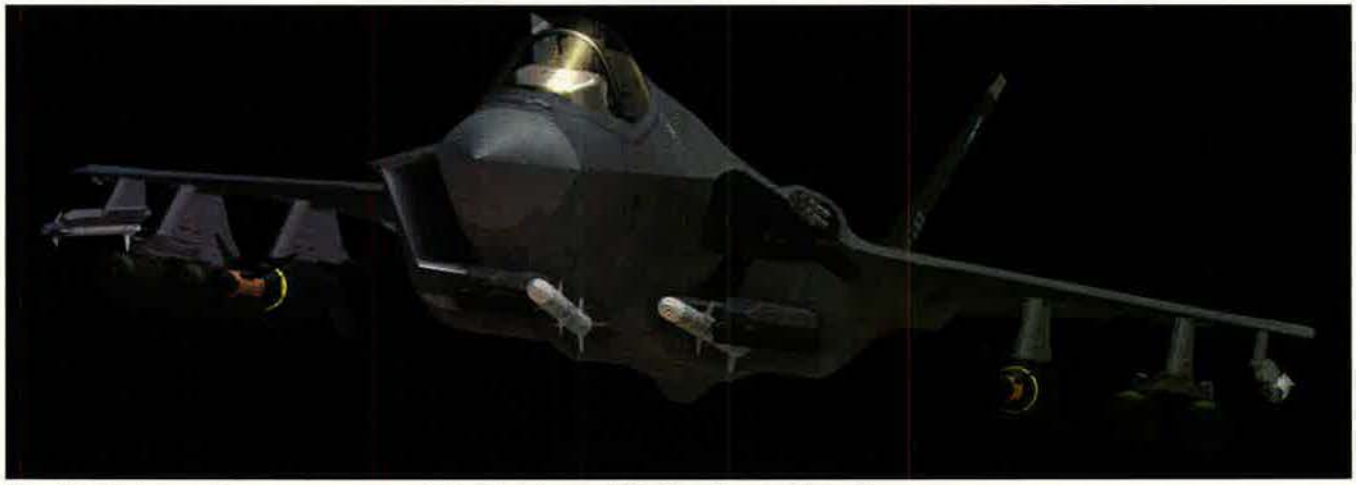
From Day 1, risk reduction has been a hallmark of the effort. Whenever possible, hardware, technologies, or techniques that have proved to work well on other programs have been adopted for the F-35. The people who solved computer code problems on the F-22 were brought over to the F-35 program. Software laboratories have been set up to fully vet the JSF's millions of lines of computer code, some of it borrowed wholesale from the F-22 and other projects. Flying avionics labs have proved out and will continue to prove out sensor systems, individually and together, in parallel with the exploration of flying qualities on the initial aircraft.

Whole systems have been adapted from other projects. The Pratt & Whitney F119 engine used on the F-22 is the basis of the F-35 engine. The F-35's electro-optical targeting system is a repackaged version of Lockheed's Sniper advanced targeting pod that, with other such pods, is helping to recast the very role of the fighter. (See "Eyes of the Fighter," January, p. 40.)

The F-22's radar, built by Northrop Grumman, has been adapted and improved for the F-35. This improved version likely will be backfitted to F-22s in the future.

In short, everything possible has been done to eliminate the risks of concurrency. And, Crowley said, by the time the first production aircraft become available for training new pilots, the program will have more than three years of flight testing under its belt, on 15 airplanes. At a similar stage, the F-22 program bogged down because it had only half as many test aircraft.

Sen. John Cornyn (R-Tex.) said at the F-35's naming ceremony in July that the Texas delegation—representing the district where the F-35 will be assembled—will work hard to get the F-35 money restored and sustained.



The F-35A's internal bays can carry two AIM-120 Advanced Medium-Range Air-to-Air Missiles and two 2,000-pound Joint Direct Attack Munitions. Externally, it can haul up to 18,000 pounds of ordnance, making it comparable to the F-15E in payload.

F-35, and the Living Is Easy

The F-35 will have the most advanced cockpit of any fighter. Instead of a series of dials and gauges, the entire "dashboard" of the F-35 will be a huge flat-panel computer screen. Simply by touching the screen, the pilot will be able to rearrange the configuration of instruments, the better to handle whatever phase of the mission he's flying. Live imagery from the electro-optical system can be enlarged and targets magnified, the better to put bomb crosshairs precisely where the weapon should go. The F-35 will be able to scrutinize targets from 30 miles away with the same clarity as if they were across the street.

The cockpit has no head-up display, which was the iconic equipment of all fourth generation fighters. Instead, all such data will be projected onto the helmet faceplate. The missile-warning optics and cameras all around the airplane do double duty as an infrared vision system; in blackout conditions, the pilot will be able to "see" in infrared just as if he was flying in daylight. This feature eliminates the need for cumbersome and problem-prone night vision goggles. Not only that, but the pilot will be able to look down, directly "through" the airplane, to see what's below him—a handy trick for the vertical-landing version.

"It simply is, I think, penny-wise and pound-foolish to start cutting money from this program and stringing out development ... in a way that we know is going to cost more money in the long run," Cornyn said.

Developmental testing of JSF is due to be completed in late 2012, and operational testing should wrap up in 2013, about the time that first units declare operational capability.

GAO's only concern, Crowley observed, is what he termed "cost certainty," and not the other ramifications of slowing the program. "They don't care whether or not we have to extend the life of legacy aircraft or whether or not we are deferring the capability of JSF to later," he asserted. "That's not their concern."

Delays in JSF, for example, could trigger an extension of the F-22 production line and compel service life extensions on large numbers of F-16s not now planned to receive them. For the Air Force, at least, the entire scheme of modernizing the fighter fleet would have to be recalculated.

He added that if GAO would be willing to take into account all the modern processes now burning down risk in the program, "I think they'd have a different view. I know we'd never convince them completely, but I think they would have a better appreciation for the things that we're doing to avoid the legacy experience."

Favorable Cost Comparison

Despite its intimidating overall cost, the JSF program will turn out to be "a bargain," said Gordon England, deputy secretary of defense. Speaking with reporters at the July 7 unveiling of AA-1 at Lockheed's Fort Worth, Tex., plant, England noted that the JSF will yield three different but highly similar aircraft:

- A conventional takeoff and landing (CTOL) model for the Air Force.
- A short takeoff and vertical landing (STOVL) model for the Marine Corps and Britain's Royal Navy and Royal Air Force.
- A bulked-up carrier-capable (CV) version for the United States Navy.

"This is an expensive program for the Department of Defense and for all the services," England acknowledged. However, the original plan was to develop three different airplanes, one for each service.

The three airplanes have significant differences. But they will all be built on the same production lines, and parts commonality between them is about 80 percent. This will present a huge savings compared with the cost of supporting three unique aircraft types.

Unit costs for the JSF are calculated in 2002 dollars, because that's the year the development program got under way. In 2014, when production reaches about 21 airplanes per month, the F-35A will cost $48 million a copy. The F-35B and F-35C will cost $62 million and $63 million, respectively. By comparison, the Eurofighter Typhoon—probably JSF's closest foreign competitor—costs more than $95 million and the F-22 is expected to come in at an average of about $120 million by the time production winds up in 2010.

Enewold said flatly that the F-35's combination of stealth, weapons, sensor fusion, and compatibility with networks of sensors and communications will make it, hands down, the best all-around combat fighter in the world.

When matched against any other multirole fighter, he said, "We will have much better capability to prosecute targets and [have] much better survivability rates. ... There's no air-to-ground scenario that I can see out there that we're not going to be the best on the block. In the air-to-air arena, we're going to be No. 2—a close second to Raptor."

"I Need a New Circuit Card"

Not only will the F-35 be able to help maintainers by offering them detailed diagnostic software to isolate problems, it will be almost constantly checking itself, in flight, for any anomalous temperatures, vibrations, or uncharacteristic behavior. If the F-35 senses that something is about to fail, it will, on its own, contact home base, ordering a check or even a replacement part.

"It's the difference between diagnostics and 'prognostics,'" said Tom Burbage, Lockheed Martin executive vice president and general manager for JSF program integration. "Diagnostics says I can isolate a fault once it [happens], very precisely. Prognostics says I can predict a failure before it happens. ... It all feeds into a focus on driving down the cost of owning and operating the airplane." Not unintentionally, the prognostic system also means that turnaround time on the ground is vastly shorter, increasing the number of sorties that can be flown in a day. Also, most parts are fixed off the airplane, so the F-35 doesn't have to sit still while technicians probe for problems.

3-for-1 "Good Deal"

Having a single development contract and factory means "we're basically getting three airplanes for ... the price of, say, one-and-a-quarter," England explained. That's a good deal, he said.

"The challenge, of course, like all programs, is to keep the cost in line," he continued. "But that's the objective of the program, and we expect the management team to deliver and the government team to deliver."

England said that the idea all along was to "compress" the program, because stretch-outs always add cost

USAF photo by 2nd Lt. William Powell

The F-35 is tightly linked with the F-22 Raptor (left). For one thing, the F-35 makes heavy use of F-22 technologies. Moreover, any significant delay in F-35 development could trigger purchases of additional Raptors to take up the slack. Current plans call for producing only 183 F-22s.

and delay getting the system into the hands of combat pilots. The number to be built, and the rate at which to buy them, is the crux of the debate, he said.

"Our judgment is, we're doing this about right," he asserted.

Both the F-35A and F-35B have passed through a major milestone—critical design review—and are in good shape, Enewold said. Only two action items for the designs were still unresolved by this summer. One was that the space around the engine was hotter than designers expected, and a variety of solutions was being examined that would force more cooling air into the space or make the parts more heat resistant. The other had to do with the dispersion of canopy fragments after a pilot ejection. Neither issue was considered a schedule-disrupting setback, Enewold said, and he expected a "conclusion" to the two issues by the end of the summer.

The carrier version is slated to pass its critical design review this winter, Enewold added.

The Air Force is the biggest customer for the JSF. It will buy the F-35A model, the CTOL. There has been heavy debate about just how many the Air Force really needs, but Gen. T. Michael Moseley, USAF Chief of Staff, said in July that the service is "still holding onto 1,763" as its goal.

Moseley said the F-35A will do heavy lifting for USAF, replacing not only the F-16 but some of F-15Es and F-117As as well, serving as a stealthy, penetrating precision attack aircraft. Later, it will also replace the A-10.

The F-35A will be the "low end"—meaning inexpensive—complement to the "high-end" F-22, much as the F-16 was the low-end complement to the high-end F-15 over the last 30 years. The F-35A will be the backbone of USAF's fighter and strike fleets, doing duty mainly as an attack airplane

With a full internal load of munitions, the F-35A will be a nine G dogfighter, as agile as a "clean" F-16 carrying no underwing stores. Alone among the three variants, it will have an internal 25 mm gun.

The F-35A will be able to carry two 2,000-pound bombs in its internal bay, as well as two air-to-air AIM-120C aerial combat missiles. After enemy defenses have been beaten down and the need for very low observability is diminished, the F-35A will also be able to haul 18,000 pounds of ordnance or fuel on external pylons, for a total of about 23,000 pounds of payload.

By comparison, an F-15E can carry 24,500 pounds of payload. The F-16 can carry 15,200 pounds.

How Many for How Many?

Moseley said the Air Force is still trying to figure out how to compare the F-16 and F-35A and how many Falcons equals one Lightning II. However, the F-16 will not be replaced on a "one for one basis" with the new fighter, since the F-35A will be so much more capable than the F-16. Fewer will be needed because fewer are likely to be lost in battle, and one F-35A can destroy more targets per mission than can an F-16. The F-35A will also be able to fly more sorties in a day than the F-16.

Large maintenance savings will be reaped by "necking down" the fighter fleet from four types to just two, Moseley said. That's because just two types mean a reduced logistics train, ranging from consolidated depot maintenance and reduced parts inventories to less training requirements for maintenance crews, and less unique support gear.

The F-35 has been designed with cost as a constant consideration, and its cost of ownership will be substantially less than that of other aircraft.

The Air Force's version of the JSF will be the first to fly, but it will be the second type to reach initial operational capability, in 2013.

The Marine Corps will fly the F-35B—the STOVL variant—able to operate from amphibious carriers and close to the front lines of a ground fight, the better to offer close air support to engaged troops. It will have a smaller payload and range than the USAF model and will not have an internal gun but can mount one on the center external station. Due to its greater weight—it achieves short takeoff and vertical landing by use of a "lift fan" behind the cockpit and by a downward-rotating rear nozzle—the F-35B will maneuver at seven Gs.

The Air Force has long considered buying some of the F-35B model in order to have a dedicated close air support platform, to directly supplant the A-10 in that role. Out of the 1,763 JSFs it will buy, the Air Force has considered making up to 400 of them jump jets.

However, the Air Force has recently decided to make a hefty, near-term investment in upgrading the entire fleet of 356 A-10s, which will allow them to stay in service years longer than expected.

Defense Against Moore's Law

How does a high-tech program—with a predicted lifetime of 40 years—stay fresh when Moore's Law tells us that computer technology will turn over every 18 months?

"We have two ways to address the demand for increased processing," according to Daniel J. Crowley, Lockheed Martin executive vice president for the JSF, and the program's general manager.

"One of them is, we've got empty card slots where we can install additional ICPs—integrated core processors—to provide more computational capacity."

The second, he said, is that the computer architecture—new computing buses and fiber-optics—means "we don't think we'll be constrained on throughput when we make those decisions to upgrade."

He also said that Lockheed has developed middleware that will make it possible for many applications to run cooperatively, such that, if one has a problem, the others can keep on running. This was one of many lessons learned from the F-22 program, which endured some of its biggest delays due to software instability.

"So, if you have that number of A-10s that have been completely rebuilt, then you may not need the STOVL," Moseley said. It's a move the service is still considering, but the prospects for the Air Force buying the F-35B seem to be fading.

The F-35B variant destined for the Marine Corps and Britain's services is slated to reach IOC in 2012, the earliest of the three versions. Enewold said that's due to two reasons.

Urgent Need

First, the Marine Corps has the most urgent need for a new aircraft. Its AV-8B Harrier IIs are worn out and have been plagued with accidents. The Harrier II also lacks adequate range and payload and is a maintenance headache. As a result, the Marine Corps wants to divest itself of the problem—and as soon as possible.

The second reason is that right now, "the STOVL is the most mature of the three variants," Enewold said. By any measure—detailed design work, parts release to manufacturers, etc.—the F-35B "leads the pack," he said. While the first F-35 to fly will be the CTOL model, the next five are production-representative STOVLs, he said. The first will fly in early 2008. There will be a total of six CTOL test birds and four of the carrier model.

The progress of the F-35B has surprised everyone, Enewold said, because the STOVL was initially considered "the most challenging."

However, two years ago, the F-35 program suffered a serious delay. (See "The F-35, Ready for Prime Time?" June 2005, p. 28.) The design was overweight by about 3,000 pounds, and a decision was made not to compensate for the reduced performance by running the engine hotter, because that would sharply reduce the durability of components and drive life cycle costs higher.

The program asked Pentagon officials for—and got—a one-year slip in the schedule to cut the weight. During that year's worth of weight cutting, "we ... were highly focused on the STOVL," Enewold said, because the F-35B was the most endangered by being overweight.

The weight savings were found, as a result of thousands of suggestions from Lockheed Martin and subcontractor employees. At the end of the added year of development, the STOVL had vastly benefited from the extra time and attention.

Part of the weight cut demanded shortening the weapons bays of the F-35B, Enewold said, to make room for a structural member. The resulting space still conforms to the Marine Corps initial requirements—each bay will accommodate a 1,000-pound-class bomb—and solved many problems. Enewold regrets that there couldn't be a common weapons bay for all three models, but he is more than satisfied with the result of the weight battle.

The F-35C model is the version intended for aircraft carrier service. Its wings will be larger than those of either the A or B models, and it will have increased structure to accommodate the repeated shock of carrier landings, as well as a tailhook. Consequently, its range is not as great as that of the F-35A, and it will maneuver at 7.5Gs. It will have the same payload as the A model, however. The first flight of the C model comes in early 2009, and it enters fleet service in 2013.

The Navy and Marine Corps, which consolidated their fighter wings a few years ago, are still debating how they will split their planned buy of 680 JSFs between the B and C models. Enewold said they will decide about two years before the aircraft start production.

Britain's Decision

Britain is a full partner on the JSF program, having contributed more than $2 billion to its development and thus earning the right to a say in requirements and design. The British need 138 aircraft—down from an original target of 150—and the British air arms, too, are still considering the proper mix between the STOVL and CV models for the Royal Air Force and Royal Navy.

Enewold acknowledged that no contracts for foreign orders have been signed yet, but believes that it's necessary at this stage to do some production planning. Including Britain and seven other overseas partners, "we're looking at between 600 to 800" aircraft to be built for allied air forces, and that range has been factored into computing the JSF cost.

Those figures are very conservative, however. The foreign market for JSF

The Last Manned Fighter?

There has been heavy speculation in recent years that the F-35 would be the last manned fighter. The notion has taken hold that supersophisticated unmanned combat air vehicles are almost here, and they will be cheaper and more effective than manned aircraft.

"I personally don't see it," said Tom Burbage, Lockheed Martin's executive vice president and general manager for JSF program integration. The high-speed target discrimination and reasoning capabilities "that are resident in a human brain really can't be duplicated from a technology perspective, yet," he said.

One of the big drivers toward UCAVs, he asserted, was that it was just getting too dangerous to fly into contested airspace, given rapidly advancing air defenses, both in the air and from the ground.

However, "what's happened with the F-35 is, we have recaptured the sanctuary of the cockpit. The airplane is very survivable and it's very lethal."

Lockheed Martin photo

The first F-35 to fly, AA-1, is towed from the paint shack at Lockheed Martin facilities in Fort Worth, Tex. The Lightning II would replace some of the F-16, F-117, and A-10 aircraft.

could easily pass 2,500 machines—and thus lower the unit cost considerably. Maintaining a low cost will give the F-35 its edge against competing fighters.

"Partners" on the program, who have paid into development and will be among the first eligible to buy the F-35 are Australia, Britain, Canada, Denmark, Italy, the Netherlands, Norway, and Turkey. Partnership makes industries in those countries eligible to compete for work on the F-35, but there are no guarantees.

Enewold said contracts are being awarded on a "best value" basis. The partners have no assurances of winning any work unless they offer the best price and quality.

Israel and Singapore are in a special status called Security Cooperative Participants, meaning they are observing the program and have expressed an interest in buying F-35s, but have not contributed to development and do not have the right to have their unique requirements addressed in the design.

Tom Burbage, Lockheed Martin vice president for the JSF program, said Greece, Japan, South Korea, and Spain have also expressed interest in buying F-35s. Analysts expect that all the countries that have bought F-16s, AV-8Bs, or F/A-18s in the past—and there are more than 35 such countries—are at least potential purchasers of the F-35.

Staying "Common"

There was concern early in the program that each partner would want unique equipment or special modifications on their own aircraft, creating in effect dozens of unique configurations on the assembly line and frustrating the cost-saving ethic of commonality. That hasn't happened, Enewold said.

"The countries have stayed common," Enewold reported, adding, "I think [they] are realizing ... that they just don't have enough money to do something on their own. It's very expensive to shoulder the entire bill of a [modification], ... so with very few exceptions, they're going to get the same hardware."

Burbage said there have been some minor studies on unique equipment—Norway wanted a drag chute because of the icy conditions at many of its runways—but such tweaks are "really on the margin. Most of the partners are fully engaged with going with the configuration that we're designing in the baseline."

After delivery, though, he expects some follow-on development work on adapting country-specific weapons to the JSFs sold overseas.

There have been some public disagreements on work share on the JSF, and Britain has threatened a few times to pull out if its demands are not met on having access to source code and stealth materials so they can fix and modify the aircraft on their own.

"Frankly, the Brits are just the most vocal" with such complaints, Enewold said. All the partners have the same gripes.

"The reason we can't come to an accommodation on everything is that we don't know how we're going to do a lot of this stuff" for the US, yet, he said. Moreover, "this stuff is very expensive. ... To have your own assembly line or have your own reprogramming center ... takes a lot of capitalization. I just don't think they can afford it."

Some of the nations may opt for their own support facilities, but the program wasn't designed that way, to save on cost.

"They may decide to afford it because it's a sovereignty issue, but I just don't think that's a very cost-effective solution for them."

Enewold also said the JSF program could not be any more open with foreign partners. They have representatives working on design and development, are on the management team, are invited to all status meetings, and have visibility into practically the whole program.

He expected the answers will be found to the friction items, and because the partners are so plugged-in, "when we know, they'll know."

The F-35 is not the first weapon system that comes to mind for fighting the war on terror, and Gordon England said it's not optimized for such a fight.

However, "you don't get to pick and choose where you'd like to fight. The adversary gets to pick and choose." The F-35, he said, is a "critical" system, because "it's important that we have an airplane with advanced technology. ... We don't want to be caught short in the future, without having invested in the technology base, and also the manufacturing base, and have a fielded capability when you need it."

Moseley, in a July speech to unveil the first test flight aircraft, said the F-35 will be "an indispensable tool ... ensuring air dominance in future homeland defense and joint and coalition warfare scenarios."

He said, "These common platforms, flown by an entire generation of pilots using standardized tactics, techniques, and procedures, will deepen coalition airpower relationships, strengthen coalition warfare, and eliminate seams during combined operations." He added, "Let's get on with building this ... aircraft." ■

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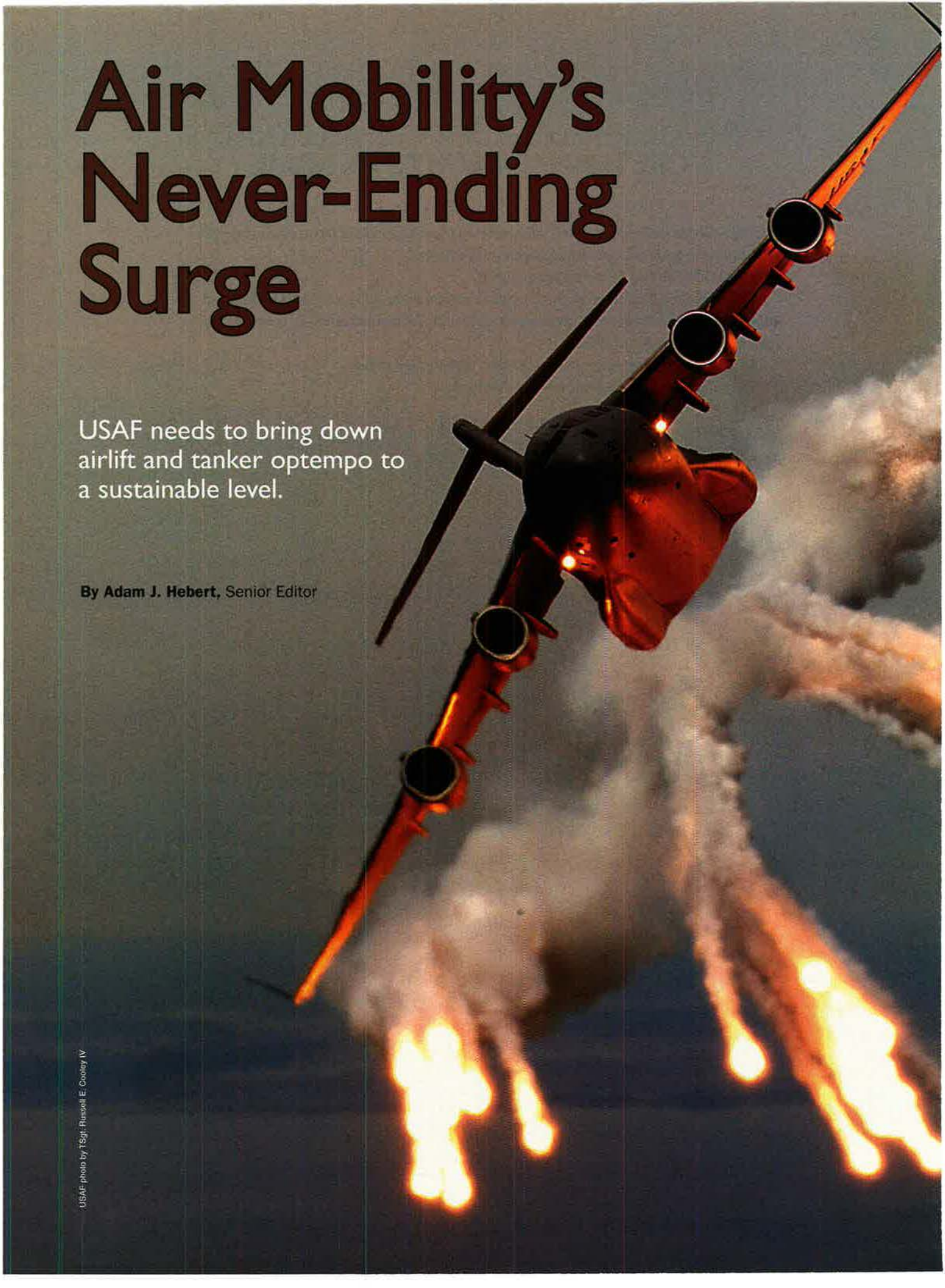
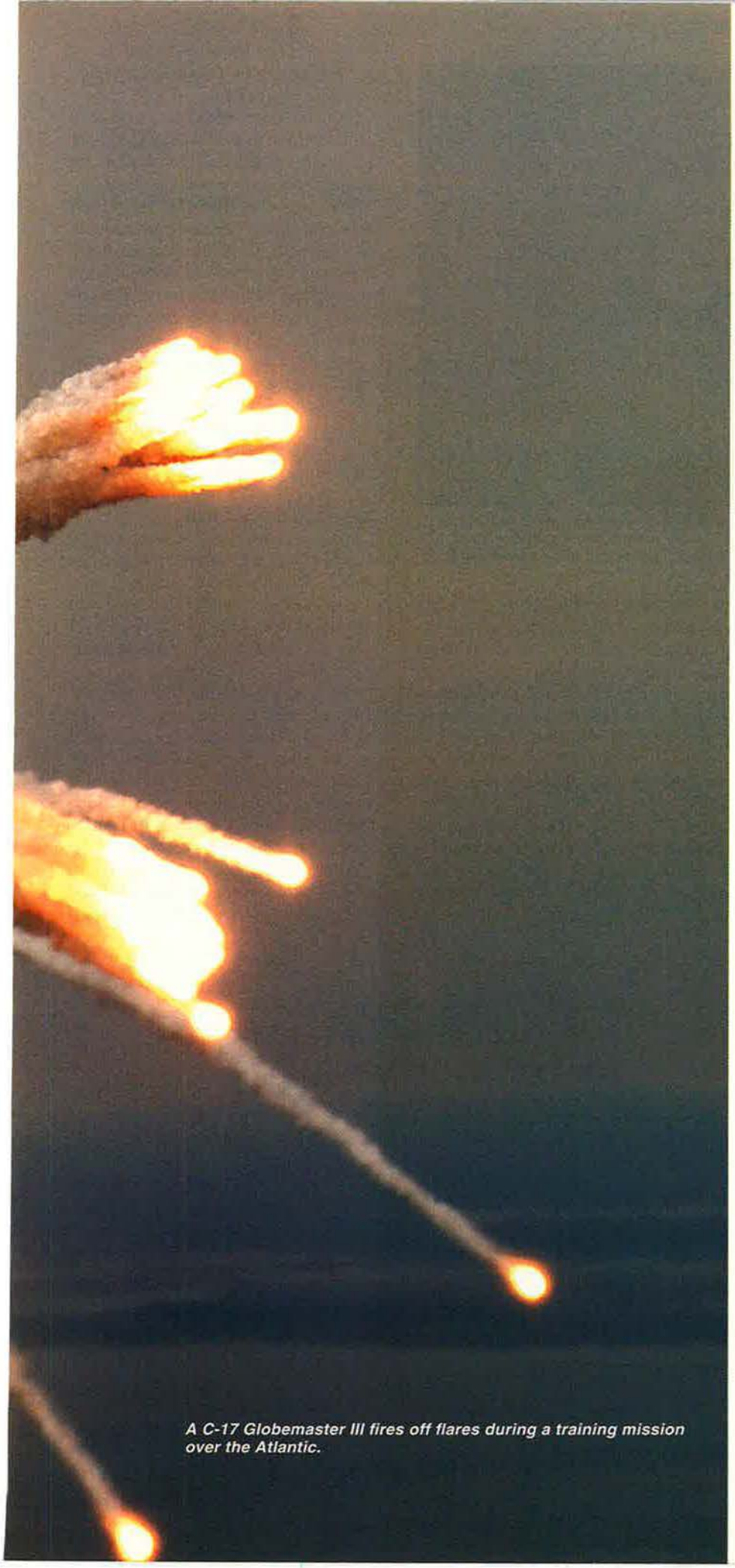
Air Mobility's Never-Ending Surge

USAF needs to bring down airlift and tanker optempo to a sustainable level.

By Adam J. Hebert, Senior Editor



USAF photo by TSgt. Russell E. Cooley IV



A C-17 Globemaster III fires off flares during a training mission over the Atlantic.

As of this month, USAF's mobility system has been running at full-throttle for five straight years—ever since al Qaeda struck the US on Sept. 11, 2001. Air Mobility Command, the supplier of airlift for the joint force, not only has been providing lift for regional combat commands but also has been underwriting USAF's massive "peacetime" airlift and refueling operation.

AMC has surged its active duty airmen, relying heavily on its newer aircraft, while also getting critical support from Air National Guard and Air Force Reserve forces—some of which are still under soon-to-end wartime mobilization orders.

Mobility activities have been carried out at a level slightly higher than what is sustainable in the long-term, said Gen. Duncan J. McNabb, commander of AMC at Scott AFB, Ill. The "gap" over the past five years has been covered by increasing the optempo of the airmen themselves, he said.

"You're getting that on the backs of people who are surging," McNabb said. "At some point, you worry about situating yourself for the Long War."

With a mix of active duty forces, reserve component volunteers, and day-to-day commercial support, AMC can supply 35 percent of its "max surge" capability without creating long-term problems for the force.

However, the command has been dipping into the other 65 percent, which constitutes its wartime surge capability. This comes through increased optempo, reserve mobilizations, and activation of the Civil Reserve Air Fleet, commercial air carriers that agree to transport military payloads in wartime in exchange for a guaranteed level of DOD business in peacetime.

AMC is pushing for a number of reforms, in-house and in conjunction with US Transportation Command, to bring its optempo down to a permanently sustainable level.

"That mobilization authority is starting to run out," McNabb said, so AMC must "get to the point where we can do this steady state."

AMC data show that, over the past year, active duty KC-135 tanker and C-130 airlifter crews averaged 141 and 149 days on temporary duty assignments, respectively.

Expeditionary Emphasis

The tasking of the command's expedi-

USAF photo by TSgt. Shane A. Cuomo

Airman James Ngo, a loadmaster from Hickam AFB, Hawaii, checks on passengers and cargo aboard a C-17 after departing from RAAFB Townsville, Australia. The C-17 is in high demand because it reliably performs both theater and intertheater airlift.

tionary combat support forces was especially heavy, as was the case throughout the Air Force. AMC's explosive ordnance disposal teams were deployed 176 days last year, and security forces averaged 201 TDY days.

Recent humanitarian missions have been stacked atop the regular Long War requirements. Officials note that AMC flew 881 hurricane relief sorties last year, moving nearly 15,000 passengers and 3,000 patients. Asian tsunami relief included 375 sorties to move almost 4,300 tons of supplies and some 3,000 passengers. After the recent earthquake in Pakistan, AMC flew 551 sorties to move more than 2,200 passengers and more than 6,300 tons of supplies.

McNabb noted that AMC is in the process of updating its operational concepts, organizational structure, and technologies to meet its long-term demands. Some of these changes are already bearing fruit. Most fundamental is its work with TRANSCOM to ensure supplies are not airlifted unnecessarily.

Planners need to make "prudent decisions about what you send by air and what you send by sea," said Gen. Norton A. Schwartz, TRANSCOM commander, in a separate interview. Airlift is expensive, even in relative terms, so it makes little sense to fly concrete or water to forward operating locations. Schwartz said that 40 percent of the shipments from Kuwait to Iraq were moving water, so now Balad AB, Iraq, and other operating locations have on-site water plants.

The "sophisticated" way to operate is with mixed delivery methods, Schwartz continued. Airlift can deliver initial supplies quickly, with the bulk following by ship. Similarly, supplies can be sealifted from the US to Rota, Spain, and airlifted to final destinations from there. These tactics reduce the overall airlift burden, which is important for financial reasons in addition to the relief they provide to mobility forces.

TRANSCOM says a single large cargo ship can deliver the same materiel as 420 C-17 sorties. Rations delivered by sea can cost 15 cents per meal if delivered by ship or $7 if delivered by air. "Maybe the No. 1 issue is not speed," Schwartz observed.

But sometimes speed is the issue. It can take three to four weeks for goods to arrive by ship or two to three days for the same goods to come via airlift.

Schwartz said Chinook helicopters were airlifted to Pakistan in the immediate aftermath of the earthquake there, and rescue submarines and supplies were immediately flown to far eastern Russia when a mini-submarine was trapped underwater last year.

In both of these cases, time was the critical factor and only airlift would meet the need. Forces "don't get there on Day 1" without air mobility, noted Brig. Gen. Frederick F. Roggero, AMC's deputy operations director.

Tweaking the System

Pop-up contingencies, time-critical changes, and preplanned missions are all run at Scott's Tanker Airlift Control Center (TACC), which serves as the air operations center for AMC. The TACC is the Air Force's most mature AOC, up and running for 14 years.

The TACC plans missions, tasks aircraft, and executes the operations. It is important to have worldwide ops handled at one place, explained Brig. Gen. Donald Lustig, TACC vice commander, because centralized command allows aircraft availability and crew utilization rates to be centrally monitored.

Aircraft can be quickly retasked according to mission prioritization. Steve Jones of the center's mobility manage-

USAF photo by SSgt. Joshua Strang

USAF relies on the Air National Guard and Air Force Reserve for much of its mobility capability. Here, KC-135 tankers from various Guard and Reserve units are lined up at Eielson AFB, Alaska, during this year's Northern Edge exercise.

ment group said the TACC follows guidance such as "use four C-5s from Dover." If one of those Galaxys breaks down, Jones said the TACC will know where to find an alternate. Barrels of capability keep flowing even though the base experiencing the breakdown would probably only know the status of its own aircraft.

Current operations are different from "peaceful" Cold War mobility sorties. Some missions are reserved for aircraft with advanced defensive systems, such as the 35 C-17s with the Large Aircraft Infrared Countermeasures (LAIRCM) system that can defeat IR-guided missiles. Planning officials expressed a desire to get LAIRCM on as many airlifters as possible, because aircraft have already come under attack from shoulder-fired IR missiles on several occasions.

Tactics have also evolved. AMC operations director Maj. Gen. Quentin L. Peterson said it used to be rare for mobility crews to fly with night vision goggles, but NVG use is now common.

AMC is also trying to improve efficiency "in the system." Officials found that airmen were not taking advantage of en route down time, noted Brig. Gen. Robert H. McMahon, AMC logistics chief. For example, a C-17 might be sitting on the ground at Ramstein AB, Germany, for 24 hours while its crew rests. There is no reason why airmen cannot do maintenance on that aircraft while it sits.

Similarly, analysis of KC-135 operations for the Joint Staff's Mobility Capabilities Study found a way to improve use of the Eisenhower-era tankers. "We have a problem with the KC-135E models," said Maj. Gen. Thomas P. Kane, director of plans and programs for AMC, as some aircraft are grounded and the others are maintenance intensive. (See "Under Lockdown," p. 54.)

Kane said increasing the crew ratios for the tankers from 1.25 per aircraft to 1.78 per aircraft produces the same number of sorties with a smaller fleet. "By having the right crew ratios, you get a higher utilization rate and you can generate the [required] sorties."

The Air Force has also invested heavily in improving the throughput at its operational hubs such as Rota and Ramstein. These upgrades are important because "if you clog up the throughput, nothing flows," Kane said.

Medevac Success

Aeromedical evacuations have also been tweaked with notable results. In Operation Desert Storm, it took 10 days to return injured troops Stateside, with a 75 percent survival rate. Today, the dedicated C-9 Nightingale is gone, replaced by critical care teams with transportable equipment. Any airlifter can now be designated for AE, noted Col. Joseph V. Stephans, AMC requirements chief, and it now takes three days to transport injured troops Stateside, with a 90 percent survival rate.

The C-17 straddles the line between a strategic and tactical airlifter, and its reliability puts it in high demand. To maximize the effect of the C-17 in Southwest Asia without unduly burdening its crews, AMC recently deployed two C-17 squadrons to the theater, where 20 aircraft operate out of three major hubs.

This is similar to the way C-130 Hercules airlifters are deployed in-theater and eliminates much of the constant back-and-forth for C-17 crews, some of which were spending more than 200 days a year on temporary duty assignments. Peterson said there are now more available sorties in-theater and more C-17s available for routine flights Stateside.

All this efficiency comes at a price, however—the Air Force is burning up its C-17 flying hours faster than predicted. Therefore, the service recently asked for seven additional C-17s as a supplement to its 2007 budget request, to serve as backup inventory.

Air Force plans called for C-17s to fly roughly 1,000 hours per year for 30 years, but current usage will use up the flying hours in 24 to 25 years, said McMahon. Both the C-17 and C-130 are being strained with high-stress takeoffs and landings, heavy use of thrust reversers, and lots of wear and tear on the brakes and tires.

The Air Force in June had 22 grounded

Mobility Operations Really Add Up

Nearly five years of support for the Global War on Terrorism have resulted in cumulative mobility totals that are, in some cases, difficult to comprehend.

Overall, since 9/11, AMC has flown more than 788,000 sorties, moved 6.44 million passengers, and delivered 3.9 billion pounds of fuel.

On June 28 alone, AMC had 950 sorties scheduled. The six-month average was 825 sorties per day—more than one takeoff every other minute, around the clock.

Airlifted cargo recently surpassed the Berlin Airlift total from 1948 to 1949. By June in the Long War, 1.86 million tons of cargo had been airlifted; Operation Vittles saw the movement of 1.78 million tons.

Finally, current-operation flying hours are as much as Berlin and Gulf War I combined. The Long War has been supported by 1.36 million flying hours. The Berlin Airlift and Desert Shield-Desert Storm required 587,000 and 657,000 flying hours, respectively.

USAF photo by SrA. James Croxon

A C-130 taxis at Balad AB, Iraq, as lightning strikes nearby. The Air Force's C-130s and C-17s are experiencing significant wear and tear from high-stress operations in war zones.

USAF photo by MSgt. Lance Cheung

Delivery pallets roll out of a C-130 flying near Pakistan. Part of the Air Force's interest in the Joint Cargo Aircraft program stems from the fact that small units in the field sometimes only need a handful of pallets.

and 51 flight-restricted Hercs. Two more C-130s will enter restricted status this year, as their center wing boxes become too stressed with age.

There are also 30 KC-135E tankers grounded because their engine struts are out of compliance.

Asked if these aircraft will be grounded forever, McNabb said, "That's certainly in the best interest of the taxpayer." The alternative is significant investment in aircraft that will never be as good as newer counterparts.

"I don't need a lot of analysis to tell me that I've got [22] C-130E models grounded today. Those maintenance guys who are stretched pretty thin don't need to go out and turn the tires and check the interiors of those broken airplanes," said Kane. "Those are combat ineffective aircraft that we're maintaining on the ramp."

Not Worth Doing

There may be a foreign market for the grounded C-130Es. "It may make sense for others to say, 'I'm going to invest in a center wing box,'" McNabb said, but further investment in these C-130Es is probably not worth it for the US.

With the KC-135Es, "it's probably not worth doing the struts and all that," McNabb said, because "if I did repair them, I just wouldn't get the warfighting capability out of them," compared to using the money and the maintainers on the KC-135R fleet.

McNabb said the metric most commonly used to measure reliability—the mission capable rate—is misleading. MC rates exclude aircraft undergoing depot-level maintenance. Theoretically, a fleet of 100 aircraft could show a 100 percent MC rate if one airplane was ready to go and 99 were in depot.

A more accurate measure is "fleet availability," McNabb said—the percent of a total fleet that is mission capable.

Fleet availability numbers reveal significant trends. The C-5A has 40.8 percent availability; the new C-17s register 72.7 percent. C-130Es show 50.8 percent availability; the new C-130J is at 74.4 percent. And the KC-135E fleet is 46.8 percent available, while the KC-10s are at 67.6 percent.

"They all follow about the same," said McNabb. "If you built them in the '60s, they are going to be in the 50 percent [availability] range. If you built them in the '80s, they're going to be in the 65 percent [range.] If they're recent, they're going to be in the 75 percent" range.

Operational reliability for older aircraft comes "on the backs of the maintainers," he said. Once you get the aircraft out of depot, mission capable, and on the flying schedule, "they work pretty well," he observed, with en route reliability in the 95 to 96 percent range across the board—with one glaring exception.

"Our problem right now is the C-5," McNabb said. "If I put that in the system, it breaks." On June 20, three of 28 mission C-5s were unexpectedly "not mission capable," such as one stuck at Incirlik AB, Turkey, needing flight-control work. June 20 was actually a good day for C-5s, because the six-month average was 20 percent off-station.

"The hidden cost of an aging fleet is direct loss of warfighting effect," said McNabb. "This gets lost in the debate. ... It tells you why recapitalization really makes a difference."

McNabb noted that the Mobility Capabilities Study specified a requirement for 292 to 383 strategic airlifters—but did not specify an exact mix, because the C-5 and C-17 were found to have "roughly the same warfighting effect."

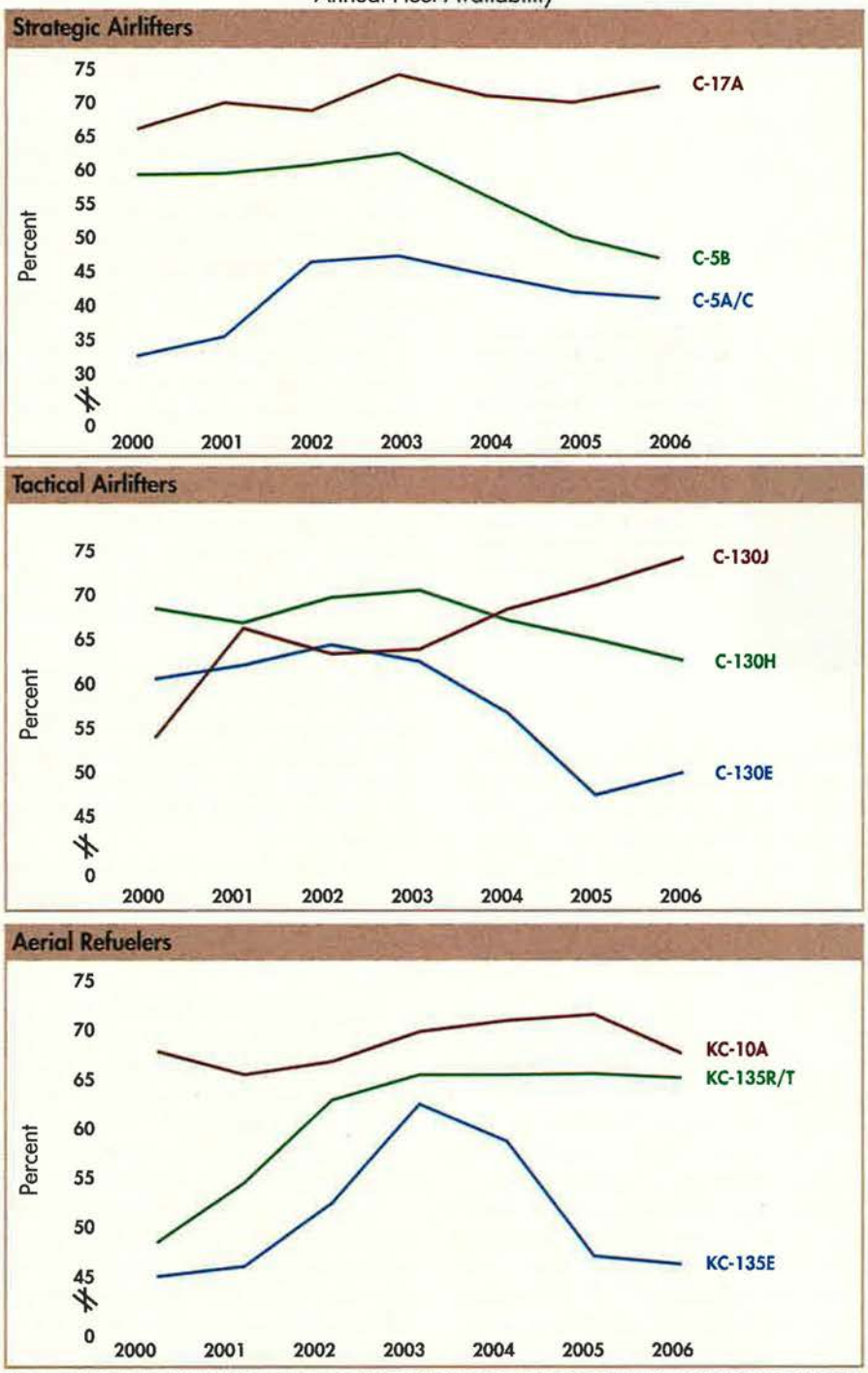
Not coincidently, when the MCS was completed, USAF had 180 C-17s on order and a fleet of 112 C-5s awaiting modernization to C-5M status with new avionics, engines, and other upgrades. One C-5 subsequently crashed at Dover AFB, Del., leaving the Air Force one strategic airlifter short of the MCS minimum.

USN photo by Geoffrey Patrick

This C-5 was deployed to help rescue a Russian submarine trapped on the floor of the Pacific Ocean last summer. USAF diverted the C-5 to San Diego. It quickly picked up two rescue submarines and flew them to the Russian Far East.

Mobility Fleet Readiness

Annual Fleet Availability



Annual fleet availability measures the percentage of a total fleet—including aircraft in depot—that is mission capable. Newer aircraft have better availability across the board.

Tankers, Not Airlifters

Schwartz said there is an opportunity cost to buying additional C-17s, and the marginal value of new tankers is higher at this point. It is also possible for the Air Force to buy too many strategic airlifters, he noted. Eventually the current operations will end, and flying and maintaining a huge fleet of cargo aircraft could be to the detriment of the much more cost-effective Civil Reserve Air Fleet.

What's the sweet spot for C-17s? Schwartz told *Air Force* Magazine his view is "it certainly isn't at 220. ... It might be slightly above 180."

Several officials expressed the view that 187 C-17s is probably the correct number because that purchase, combined with possible foreign C-17 buys, will allow the manufacturing line to remain open until AMC knows if the C-5 modernization program will be successful.

MCS assumed the success of the C-5M program, McNabb said. (See "Rising Risk in Air Mobility," March, p. 28.) Whether this pans out will not be known until around 2009, however. The first C-5M flew this year.

The program of record is for all 111 C-5A and C-5B aircraft to be converted to C-5M configuration, which will hopefully increase Galaxy reliability to a level comparable with AMC's other aircraft.

"If we get that increased mission capable rate," the effect is the same as getting 10 additional C-5s, said Brig. Gen. Scott E. Wuesthoff, Kane's deputy. This will "bring more warfighting effect to the table," as there are still some missions involving outsize cargo that the C-5 does best.

If the C-5 modernization plan does not deliver the expected reliability, the Air Force may decide to cancel the Reliability Enhancement and Re-engining Program for the older A model aircraft and redistribute the $5 billion in funding, said Chief of Staff Gen. T. Michael Moseley.

"We have some opportunities inside the mobility portfolio that are playing out, like continued C-130 acquisition for [Air Force Special Operations Command], the KC-X, the Joint Cargo Aircraft," Moseley told reporters this year. "The $5 billion ... may be helpful for those three programs, but I don't know yet. We still have the [C-5M] test ongoing."

Multimission aircraft such as the the C-17 are at a premium, a lesson the Air Force is applying to its search for a KC-135 replacement, dubbed KC-X. Both Schwartz and McNabb said they desire a new tanker with "floors, doors, and defensive systems," so that it can also haul troops and cargo.

The Air Force has issued the KC-X request for information, and a winning contractor is expected to be named next year.

"I am looking for versatility—single-mission airplanes don't give that," Schwartz said. "The Secretary of Defense went to Baghdad in a C-17. Would I send [him] to Baghdad in a C-17 if I had a KC-X? Probably not. I would use the C-17 in a better way."

A properly configured multimission tanker also "offers a little bit of insurance" against a failure of the

USAF photo by TSgt. Shane A. Cuomo

C-17s such as this one landing in Australia have much higher reliability rates than the older C-5s, which will undergo an extensive modernization program. Gen. Duncan McNabb, AMC commander, says, "the hidden cost of an aging fleet is direct loss of warfighting effect."

CRAF network. "Three of my CRAF carriers remain in bankruptcy—the airline industry is fragile," Schwartz observed.

"I constantly worry about CRAF," McNabb added, because long-haul providers are becoming more international, leaving fewer domestic options.

Tactical Missions

Also on the horizon is the Air Force version of the Joint Cargo Aircraft, a small intratheater transport being procured with the Army. Current plans call for each service to buy approximately 75 JCAs for missions such as delivering three pallets to troops in the field in Afghanistan. These small payloads are commonly delivered today by larger (and sometimes largely empty) aircraft. USAF should take delivery of its first JCA in 2010. (See "Washington Watch: Air Force, Army Shake Hands Over JCA," August, p. 8.)

AMC has also established six contingency response groups, which consist of a standing, trained force of 112 airmen that can deploy and establish an airfield within 72 hours. Aerial porters, air traffic controllers, and civil engineers set up the base before handing it over to follow-on expeditionary combat support forces.

Although 11 airfields were expanded and three others opened from scratch within 10 days of 9/11, a better way was needed to open airfields. The Air Force "needed to be better, faster, and more prepared for opening expeditionary air bases anywhere in the world," said Col. James G. Kolling of the AMC installations and mission support directorate.

The CRGs have already deployed several times, for the Pakistan earthquake and hurricane response in the US last fall.

Peterson noted that having six CRGs would allow multiple bases to be opened simultaneously, all in a matter of days.

TRANSCOM is building on this formula to develop task forces for the larger port-opening mission. Airlift is but one part of the equation for opening a new supply pipeline, Schwartz said, so TRANSCOM's Joint Task Force-Port Opening (JTF-PO) teams will bring together USAF and Army units that previously operated independently.

"When the stuff comes off the ramp of the airplane, the mission's not done," Schwartz said. "What we need is a capability that's bigger than each of the particular modes of transportation."

The mission last year to save the trapped crew of a Russian submarine demonstrated the responsiveness of today's military mobility forces. On Aug. 4, 2005, the Russian Priz-class AS-28 mini-submarine became trapped in fishing netting 625 feet under the sea off the Kamchatka Peninsula.

Russia lacked the equipment to save the seven sailors aboard the submarine and, learning from the 2000 *Kursk* tragedy in which 118 Russian sailors died, immediately put out a call for help.

TACC vice commander Lustig said visibility into the transportation system allowed officials to "snatch a rested crew" and assign it to this high-priority mission. The TACC identified a C-5 in flight over North Dakota, which was returning to the US from Spain, as the mission aircraft.

They diverted the C-5 to NAS North Island, Calif., where two Navy Super Scorpio rescue subs, gear, and all the necessary personnel and aircrew were loaded.

Several C-17s from around the country were quickly tasked to bring another submersible, loaders, and supplies. A KC-10 and three KC-135s performed four en route aerial refuelings.

The United Kingdom also sent a rescue submarine, "on a leased C-17, by the way," Schwartz said. "The Brits got there first, we got in a couple of hours later. They were ahead of us," so the US airmen helped unload the British aircraft.

The British rescue sub, assisted by US Navy divers, freed the trapped Russian submarine. The seven Russian sailors were saved before their oxygen ran out.

Squadron Leader Keith Hewitt, captain of the RAF's mission aircraft, said the UK is "now able to reach farther points of the globe rapidly and effectively" with the C-17. "Perhaps the event that sums up its capability most graphically was the Priz rescue."

As this case shows, however, it was not just equipment—flexible personnel and tactics were also needed for the mission. "When the mini-sub got off the airplane and onto the ramp, it didn't do anybody any good," Schwartz noted. "It had to go over to the adjacent port," not a task the Air Force was prepared to perform.

When the rescue submarine got to the port, "do you think the driver of that 18-wheeler had a clue how to crane that mini-submarine onto the ship that was then going to go out to the incident site? No," Schwartz said, saying the incident highlights the importance of joint port opening capabilities.

The location of the next contingency is unknown, but it will come, and AMC and TRANSCOM will be expected to keep things moving. ■

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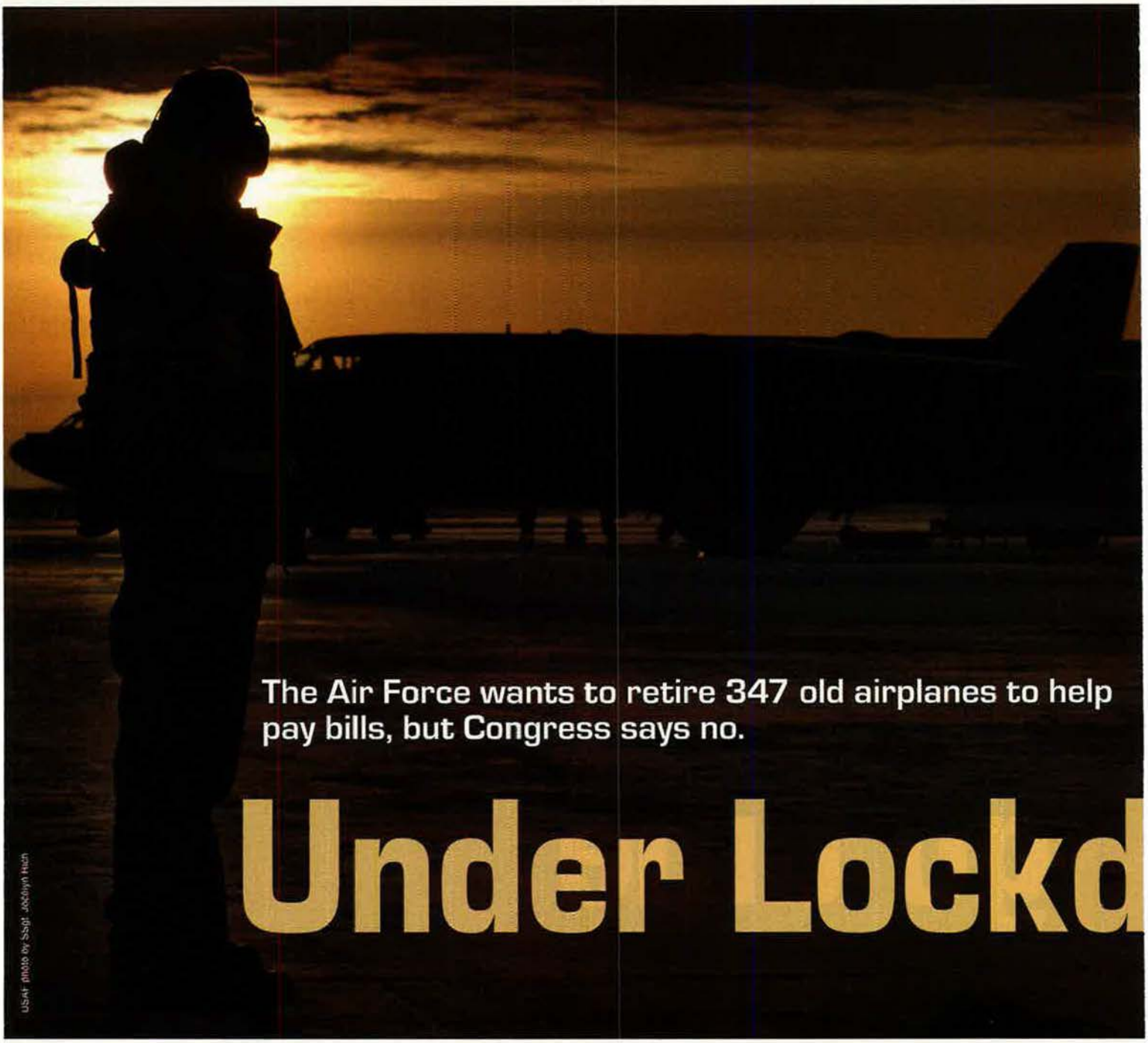

USAF photo by SSgt Jocelyn Hoch

The Air Force wants to retire 347 old airplanes to help pay bills, but Congress says no.

Under Lockd

By Megan Scully

A reluctant Congress, driven as much by parochial concerns as strategic fears, stands as the Air Force's biggest barrier between its past and its future.

The Air Force, on one side, is attempting to trim more than 1,000 old, maintenance-intensive, and less-capable aircraft from its fleet, to safeguard funds for future programs.

Congress, on the other side, has batted down many of those plans while voicing concerns that retiring the aircraft will deplete the military of much-needed aviation assets.

Presently, the Air Force by law must keep 347 aircraft on its ramps that it would prefer to retire. Of those, 51 do not even fly—they are older KC-135E and C-130E and H models that have been grounded because of flight safety concerns.

This is a story that plays out on Capitol Hill every year, and the Air Force usually finds itself on the losing end of the battle. This year, however, the stakes are even higher as USAF has increased the number of aircraft it wants to retire while banking on the savings to help fund other modernization and procurement programs.

This year, there appears to be some hope—at least within the Senate, where lawmakers, though skeptical, have agreed to some of the requests. The Air Force has also struck a conciliatory tone, with Gen. T. Michael Moseley, Chief of Staff, indicating

B-52s at Minot AFB, N.D., await launch. The Air Force wants to trim the fleet to 56 from 94 B-52s.

that some of the proposed retirements could wait a few years until follow-on systems are ready.

The average age of a USAF airplane is a record 23 years old, with many of the airframes in the fleet dating back to the airplane procurement heydays of the 1960s, when the Air Force bought, on average, more than 600 new airplanes a year.

Many aircraft bought in large numbers in the 1950s and early 1960s, including the B-52 bomber and KC-135E aerial refueling tanker, are still in service today.

"They are not modern airplanes," Lt. Gen. Christopher A. Kelly, vice commander of Air Mobility Command, said of the KC-135s during a February hearing with a House Armed Services Committee panel.

Over the last several decades, procurement numbers have dipped rapidly. Average purchases dropped dramatically, to 60 a year, during the so-called defense procurement holiday of the 1990s.

The procurement numbers have inched back up to 84 aircraft a year, as next generation aircraft, including the F-22 Raptor and numerous unmanned aerial vehicles, begin to come online.

But for the Air Force, the hefty bill required to maintain decades-old platforms is frustrating efforts to buy the new aircraft.

Today, the service spends fully one-fifth of its procurement budget to modify and upgrade its aircraft—the highest percentage in the Air Force's history—according to a document the Air Force is circulating on Capitol Hill.

That expense steers money away from Air Force leaders' future plans and priorities: the F-22 Raptor, the F-35 Lightning II, Predator and Global Hawk UAVs, and a next generation long-range strike platform.

"The challenge today, with growing operating expenses, is to balance [sustainment of old airframes] against the cost of replacing Cold War-era aircraft with modern aircraft," the Air Force document states. "The Air Force needs to meet today's needs, while at the same time ensuring future airmen inherit an Air Force that is relevant, capable, and sustainable."

The Air Force Plan

Over the next five years, the Air Force wants to divest itself of 1,033 aircraft, or 17.1 percent of its entire fleet. The hope, officials say, is to free billions of dollars through 2011 to pay for 585 new manned and unmanned aircraft.

The newer airframes are more capable and, therefore, officials say they are needed in fewer numbers.

The Air Force also intends to make new aircraft able to perform a wide range of new missions. A new KC-X tanker to replace the KC-135, for example, is expected to serve double duty as a cargo airplane in addition to its primary refueling mission.

Flying fewer, but more capable, airplanes will bring about spending reductions in other areas of the Air Force budget, namely force structure, maintenance, and personnel accounts, said Brig. Gen. Charles W. Lyon, deputy director of programs for the Air Staff's strategic planning directorate.

In its Fiscal 2007 budget request and the accompanying Quadrennial Defense Review sent to Congress in February, the Pentagon revealed plans to cut the fleet of venerable B-52H bombers from 94 to 56, for a total savings of $680 million through 2011. The goal, according to the QDR, is to help field a new long-range strike capability in the next 12 years, while fully modernizing the remaining B-1s, B-2s, and B-52s.

The Defense Department also wants to accelerate the planned retirement date for 52 F-117 Nighthawk fighter jets. The F-117 was the prize of the Air Force fleet in 1982 when it became the first operational stealth aircraft under a veil of secrecy. "I guess what we've found is the world has changed around in many manners," Lyon said. "We've moved on to a second and third generation stealth capability, as well as some really significant weapons advancements."

The plan is to move the stealth fighters' out-of-service date from 2011 to 2008, amassing savings of $1 billion over the next half-decade. Moseley recently indicated that he is not wedded to this idea, telling reporters, "I don't want to let go of the 117 until we have the [equivalent] capability demonstrated and operational" in the F-22A.

The Air Force has also proposed ramping down U-2 operations and fully retiring the fleet by 2011 to save another $1 billion. Moseley said recent discussions with the combatant commanders have convinced him this may be premature. "Until the Global Hawk is ready [to assume the U-2 mission], taking the U-2

USAF photo by SSgt. Shane Heiser

Two F-15s intercept a C-21 over an Alaskan mountain range during the training exercise Alaska Shield-Northern Edge in 2005. The Air Force has not been blocked from shedding some older F-15s and C-21s.

off line doesn't make any sense," he said, because there is still a need for its intelligence-generating capabilities.

Nonetheless, the Air Force wants to replace the U-2 with unmanned aircraft capable of around-the-clock surveillance. Platforms like the Predator and Global Hawk are rapidly becoming more "sophisticated and efficient," Lyon said.

Officials have also told Congress that retiring 114 of the oldest KC-135E models by 2010 would save the Air Force $6.1 billion (roughly the cost of 50 new tankers), and USAF seeks to divest a total of 145 C-130E/H cargo airplanes by Fiscal 2014.

The Air Force says the expense of maintaining and operating these aircraft far outweighs the benefits of keeping them in the force, particularly as defense officials gird for what is expected to be a downswing in military procurement spending over the next several years.

Not all the moves are being blocked. USAF is not prohibited from retiring 126 older F-15s, 38 US-based C-21s, or 277 F-16 fighters, among others. For helicopters, the Air Force plan is to replace its fleet of HH-60G combat search and rescue helicopters with a larger fleet of 141 new aircraft.

"In order to transform our Air Force as directed by [the Quadrennial Defense Review], we know some of this is going to have to be self-financed," Lyon said. "We really can't expect to get help outside the Department of the Air Force to get funding."

Indeed, Lyon said failure to retire these airframes will force the Air Force to cut other areas of its budget—a step the service views as counterproductive to its plans down the road.

An Old Struggle

"To buy these new aircraft, to stay within our [total obligation authority], we just have to trim within our current force structure," Lyon said. "If we hold on to these aircraft, that means we have to look elsewhere to trim our expenses."

The service would have to raid infrastructure, operations and maintenance, and personnel accounts. Already, the service is cutting its force by 40,000 personnel over the next five years—a move made possible, in part, by more advanced weapons systems that require less equipment and less manpower. (See "The New Air Force Program," July, p. 30.)

Retiring aircraft, however, is not a new budget-saving strategy for the service. In 1995, years after the end of the Cold War, the service declared that it had 38 more B-52 bombers than it needed. The country, Lyon said, no longer needed the big bomber fleet to serve as a strategic deterrent against the Soviet military.

But Congress blocked the Air Force's proposal, forcing the service to keep its B-52 fleet at 94 bombers—the same size it was during the Cold War. The Air Force adjusted its BUFF requirement to 76 aircraft by 2000, but Congress continued to mandate a fleet of 94 B-52s.

Those decisions, Lyon said, have cost taxpayers $500 million to keep bombers the Air Force says it does not want or need.

"I'd like to think how much of an investment we could have made in the next generation bomber" with that money, Lyon said.

USAF photo by SrA. Aaron D. Allmon

A C-130E at Aviano AB, Italy, prepares to deliver an Army airborne unit into Bosnia as part of Rapid Resolve II, a show of force exercise in July 2000. The aged C-130E is the "poster child" for USAF's need to divest old aircraft.

Why Congress Blocks the Moves

Parts of the Air Force's five-year divestiture plan were approved by the Senate in June as part of the $517.7 billion defense authorization, but the permission to retire aircraft still falls far short of the sweeping retirement plans the Air Force put on the table earlier this year.

Key decision-makers in both chambers of Congress are wary of the service's plans, questioning whether Air Force leaders are jumping the gun on retiring airframes, such as the historic B-52 bomber, before a new fleet is in the air.

House Armed Services Chairman Duncan Hunter (R-Calif.) has been particularly vocal on the issue, arguing that the older airframes represent an insurance policy, an essential ingredient for a military preparing for a broad swath of future contingencies around the world.

C.W. Bill Young (R-Fla.), a defense hawk and House Appropriations defense subcommittee chairman, voiced similar concerns in a recent interview. "Yes, I think we should continue to advance the state of the art in our aircraft," Young said, but many retirements should be held off "until we have the new aircraft" to perform the missions of the older airplanes.

For lawmakers, the aversion to retiring aircraft is more about jobs than strategic military needs, said Richard Aboulafia, an aircraft analyst at Teal Group in Fairfax, Va. In an election year, convincing lawmakers to sacrifice well-paying and highly skilled jobs in their districts is an inevitable, and perhaps even insurmountable, challenge.

"It never really works," Aboulafia said, despite the Air Force very aggressively pushing for the moves. "You see a bunch of compromises."

Lawmakers, he added, will agree only to retire the "worst offenders, the real hangar queens."

For instance, Sen. Byron L. Dorgan (D-N.D.), a member of the Senate defense appropriations subcommittee, is a strong opponent of retiring B-52s, many of which are housed at North Dakota's Minot Air Force Base.

Dorgan, who helped restore money in the Fiscal 2006 budget for the B-52s, has emphasized that the legendary bombers are efficient and reliable and should not be scrapped when the Air Force starts to feel the impacts of an impending budget crunch.

Meanwhile, members of the House remain staunchly opposed to placing almost any of the Air Force's aircraft in the boneyard.

Their arguments are similar—too much risk and not enough assurance from Air Force leaders that a smaller fleet can meet worldwide operational demands.

"How can you discontinue the only stealth fighter?" asked Rep. Steve Pearce (R-N.M.), questioning the Air Force decision to stand down the F-117 three years ahead of its previous schedule. (The F-22A stealth fighter became operational last December.)

But Pearce, whose district includes Holloman Air Force Base, home to the F-117 fleet, acknowledged that his concerns went beyond national security. Retiring the aircraft would have a "pretty serious adverse effect in our district," he said.

In addition to the bombers, many of the older KC-135Es are either grounded or go unused by combatant commanders, who say they are underpowered and can't take on full fuel loads during hot weather days.

Meanwhile, the service has restricted many C-130E cargo airplanes because of structural deficiencies, but is still paying millions to maintain and repair them.

"We've got a lot of C-130Es that are just sitting around and [can't] fly right now," Lyon said.

Congressional Resistance

The Air Force is pushing its divestiture plan on Capitol Hill, attempting to convince lawmakers to overturn the onerous restrictions.

"This approach is not possible without the support of Congress," the Air Force document urges. "Lifting the legislative restrictions on retiring aircraft will alleviate pressures on our constrained resources that continue to erode our overall capabilities."

Indeed, top service officials have pleaded with both chambers to allow the Air Force to send dozens of bombers, fighters, and cargo airplanes to the boneyard at Davis-Monthan AFB, Ariz.

"I need your help in lifting the legislative restrictions," Air Force Secretary Michael W. Wynne told Senators during a hearing in March.

Getting that help could be difficult, noted Winslow T. Wheeler, a former Senate Budget Committee analyst. The potential for lost jobs is the central issue for worried lawmakers, he said.

But Wheeler, who vocally and routinely criticizes what he considers wasteful government spending, said he concurs with many lawmakers who believe it is too soon to retire many of these airframes.

"I agree that retirements should be held off, but the members of Congress are doing it for all the wrong reasons, for pork reasons," Wheeler said.

Despite election year concerns, the Senate appears to have listened to the Air Force's pleas, passing in June a $517.7 billion defense authorization bill that would allow the service to carry out at least some of its plans.

For one, the Senate bill did not include language prohibiting retiring the F-117 and U-2 aircraft, a silent endorsement of the Air Force's plans. The Senators required only an environmental assessment for bedding down F-22 Raptors as "replacements for the

USAF photo

Ground crews service F-117s of the 37th Tactical Fighter Wing as the unit prepared to deploy for Operation Desert Shield. The Air Force believes the F-117 missions can now be better done by newer F-22s and F-35s.

USAF photo by SSgt. Andrea Knudson

retiring F-117A aircraft" at Holloman AFB, N.M.

For the U-2, they required a study from the Air Force Secretary on migrating the U-2's electro-optical reconnaissance system to the Global Hawk unmanned aerial vehicle.

Not All Roses

Senators also approved language in the legislation that would allow the Air Force to retire 29 grounded KC-135E tankers in Fiscal 2007.

And they did not outright forbid all B-52 retirements, but they did limit it for 2007 to just the 18 that the Air Force has wanted to stand down for years. However, they also put a hold on retiring those bombers until after the Air Force charters a study by the Institute for Defense Analyses on the bomber force structure.

"The committee is troubled that the Air Force would reduce the B-52 bomber fleet without a comprehensive analysis of the bomber force structure," according to the Senate Armed Services Committee report accompanying the bill.

The Senate was not universally supportive of the Air Force plans. The lawmakers prohibited standing down any C-130E and H model airlifters in Fiscal 2007 and noted that it would be premature to retire any of the aircraft until the Air Force Fleet Viability Board studied the matter.

By far the toughest opposition to the Air Force's plans, however, is found on the other side of the Capitol.

Specifically, the House prohibited the Air Force from retiring any of the B-52s, except one aircraft used for testing by NASA, and would require USAF to keep at least 44 B-52s in the fleet until 2018, or until another long-range strike aircraft "with equal or greater capability" to the B-52 reaches initial operational capability.

House lawmakers also want to limit the retirement of Nighthawks to 10 stealth fighters, but require the service to preserve those aircraft for future contingencies by maintaining them at a minimal level.

The House also refused to allow the Air Force permission to retire any U-2s until the Defense Department provides Congress with information indicating that manned aircraft are no longer needed for intelligence-gathering and surveillance.

House lawmakers limited the retirement of KC-135E aerial refueling tankers to 29 next year. But, as with the F-117s, the Air Force would have to minimally maintain those airframes in case they are needed for future missions.

The fate of the aircraft hinges largely on House-Senate conference negotiations for the defense authorization bill, expected to be completed in September. Members of the two chambers began meeting on their versions of the bill in July, but were not expected to complete talks before the August recess.

The Air Force, meanwhile, is expected to continue pushing its long-standing aircraft retirement plans, which Lyon said have been given added heft by the most recent Quadrennial Defense Review.

"We're going to sustain the legacy capability that we need; we're going to modernize them when necessary and do this recapitalization," Lyon said. "The QDR allowed us to put that under the scrutiny, one more time, of the entire Department of Defense, Secretary of Defense, and staff." ■

Photo by Ted Carlson

At top, a U-2 Dragon Lady, Block 20, taxis to the runway at Osan AB, South Korea (followed by a high-performance chase car). Congress has denied USAF the opportunity to retire any U-2s for the time being. Fifty-one Air Force KC-135s, such as the one shown here, are grounded for safety reasons, but USAF is still prohibited by law from retiring them.

Megan Scully is the defense reporter for National Journal's CongressDaily *in Washington, D.C., and a contributor to* National Journal, Government Executive, *and* Seapower *magazines. This is her first article for* Air Force *Magazine.*

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Eleven 2,000-pound JDAMS fall from a B-2, which actually can carry 16. The stealth bomber can carry up to 80 of the 500-pound variety.

The J

Precise, versatile, and relatively cheap, the Joint Direct Attack Munition today is a mainstay Air Force weapon system. Twenty years ago, it was something else entirely: a science project that was running out of time.

The Air Force Armament Laboratory had been studying a possible new inertial guidance system for bombs since the early 1980s. The USAF scientists had produced some demos—add-on tail kits that looked much like JDAM does now—and scored good results in test drops.

But it was still the years of the Cold War. Air Force tactics still emphasized low-level penetration of Soviet-developed air defenses. Service leaders were not looking for a high-altitude, all-weather, near-precision guided weapon.

"There was not a whole lot of interest in it, frankly," remembers Louis Cerrato, chief engineer of the JDAM Squadron at Eglin AFB, Fla., who has worked on the weapon since its earliest days.

Then, in the space of a few years, the world changed.

The capability and availability of Global Positioning System data exploded, making GPS a reliable and constant source of bombing coordinates. The 1991 Gulf War showed that flying high was the best way to fight post-Cold War adversaries. Operation Desert Storm also showed the Air Force that it needed more than just laser guidance alone, as bad weather or

DAM Revolution

The low-cost, highly accurate Joint Direct Attack Munition has revolutionized bombing in just a few short years.

By Peter Grier

sand and dust storms could foil laser designators.

The new inertial guidance weapon was chosen as an acquisition reform pilot program, giving it flexibility and independence. The program that eventually became JDAM was rushed into development and production.

The Joint Direct Attack Munition is a combination of "dumb" bomb and a set of add-ons, a low-cost guidance kit that converts free-falling bombs into guided weapons. The kit's major parts are a tail section, which contains an inertial navigation system and Global Positioning System equipment, and body strakes that provide extra stability and lift.

Desert Storm was the crucial turning point in JDAM's fortunes, even though the Air Force had been working on the idea for years.

Of the approximately 250,000 munitions dropped by US aircraft in the first Gulf War, some 210,000 were "dumb" iron bombs. The lack of accuracy of these unguided gravity bombs proved a problem. In the first two weeks of fighting, results fell far below projected rates—in part because of poor weather but also because of poor aim.

A postwar analysis showed that unguided munitions fell only within about 200 feet of their intended targets, on the average.

Laser guided weapons were far more effective. They accounted for 75 percent of the destruction wrought by US attacks. But laser guided bombs were expensive and could be used only in good weather. Not all US airplanes could carry them.

Clearly, the US needed a low-cost precision alternative. In May 1991, Gen. Merrill A. McPeak, then Air Force Chief of Staff, wrote a memo stating "a requirement for an all-weather precision guided munition."

That was where JDAM came in. In 1992, a demonstration strike using a 1,000-pound bomb steered by inertial guidance and GPS data was a complete success. Initial development contracts were awarded in 1994.

An Acquisition Success

Cost was a big issue, as the flush years of the Reagan-era defense buildup were long gone. McPeak insisted that the Air Force would not buy this new weapon if its cost rose one penny beyond the $40,000 per-unit estimate of the JDAM program manager.

But the new program had one big thing going for it: Congress had selected it to be a test of acquisition reform. This allowed JDAM managers to waive some costly and burdensome regulations for the competing contractors.

Companies would not have to hand over extensive pricing data demanded on most other contracts, for instance. They could use some off-the-shelf parts, instead of relying only on military-specification components.

Eventually, the initial seven competitors were whittled down to two: Martin Marietta (subsequently merged into Lockheed Martin) and McDonnell Douglas (later absorbed by Boeing). The technology was fairly simple, so this battle would be won by the firm that could produce JDAM kits at the lowest price.

McDonnell Douglas decided, in essence, to act as if it had already won. "They spent their time actually doing the design for manufacture," said Cerrato.

The St. Louis-based firm brought in JDAM suppliers and promised them long-term contracts in return for low costs. Over 18 months, estimated unit cost was cut in half.

In September 1995, the Air Force tapped McDonnell Douglas as its JDAM producer. The final unit cost was $18,000—less than half the $40,000 ceiling set by McPeak. (As of January, Boeing had delivered 145,000 JDAM tail kits to the US military. The current production rate is around 3,000 per month.)

In March 1999, NATO launched Operation Allied Force in the Balkans. Its goal was to force Yugoslav President Slobodan Milosevic to halt his attacks on ethnic Albanians in the province of Kosovo.

For the Air Force, operations in this foggy corner of Europe were difficult. During the first two months of combat, the weather was so poor that airplanes could mount strikes against fielded forces only about one-quarter of the

USAF photo by SSgt. Jessica Kochman

The GBU-31 JDAM consists of a bomb body, taken from inventory, a tail kit guidance section, and a set of strakes that help it maintain a precise aim angle. The near-precision weapon has changed the calculus of air attack.

time. Many fixed-structure targets were in urban areas, where collateral damage was a big concern. USAF needed an all-weather, precision guided weapon.

At this point, JDAM production was just starting. There had also been rocky patches along the way—flimsy tail fins had been redesigned, for instance. Some Air Force officials were concerned that JDAM's fiberglass shipping and storage crates were too fragile.

B-2s Over Kosovo

The B-52 and F/A-18 were to be the first airplanes to carry JDAMs. But Pentagon officials decided that the B-2, then going through operational tests to develop non-nuclear capabilities, would be the best choice. The B-2 stealth bomber, based at Whiteman AFB, Mo., was designed to deliver nuclear weapons against heavily defended targets in the Soviet Union, and it needed a non-nuclear weapons enhancement. JDAM was the answer.

"All these things came together at the right time," said Cerrato. "We had some test [JDAM kits] here at Eglin, and they actually said, 'No, no, you've got to send them to Whiteman.'"

At Whiteman, 2,000-pound JDAMs were loaded into the stealth bombers, 16 at a time. Then the B-2s flew combat missions to Kosovo and back—a 30-hour round-trip. (See "With Stealth in the Balkans," October 1999, p. 22.)

These missions destroyed high-value targets such as an oil refinery wedged in among civilian buildings, but JDAMs were used in other ways as well, ways that the program office had not anticipated.

For instance, one mission took out the Zezeljev Bridge, which spanned the Danube River at Novi Sad.

"We didn't expect [the weapon] to be used against bridges," said Cerrato, but "the pinpoint accuracy amazed all of us."

After-action reports showed that 98 percent of the 652 JDAMs used in the campaign hit their targets.

Accuracy can't make up for bad intelligence data. During OAF, B-2s severely damaged the Chinese Embassy in Belgrade, hitting it with five JDAMs. The bombs had been steered to coordinates that mission planners mistakenly thought located an arms agency.

Still, JDAMs proved so useful that they were rapidly used up. During the Balkan air war, "they used almost the whole first lot," said Cerrato.

Going Winchester

In the middle of the conflict, Gen. Richard E. Hawley, head of Air Combat Command at the time, went so far as to warn that it was "really touch and go as to whether we will go Winchester [run out of] on JDAMs before we get the next delivery."

As Allied Force drew toward a successful close, Pentagon officials announced that JDAM production would soon be tripled.

The Air Force continues to refine JDAM kits. The bombs are more accurate than they used to be, in part because GPS signals are more accurate and in part because GPS receivers have improved.

"It is really [the accuracy of] the source of the target coordinate that is the limiting factor now," said Cerrato.

Antijam capability has been added. Saddam Hussein actually deployed jammers intended to disrupt the system, though they ended up being of little use.

US forces expended some 6,500 JDAMs during Operation Iraqi Freedom, hitting a wide variety of targets. (See "Precision: The Next Generation," November 2003, p. 44.) For instance, in fierce fighting against insurgents for

AP/USAF photo

This is a test JDAM about to ruin the hulk of an A-6 Intruder. JDAM operates by inertial measurement, coupled with updates from the Global Positioning System. The result is a bomb that routinely hits within 10 feet of the aim point.

NATO photo

JDAMs were widely used during Operation Allied Force in 1999. These images illustrate how a single aircraft with JDAMs dropped a span over the Danube River.

control of the cities of Fallujah and Ramadi, Marine F/A-18s made extensive use of a variant of the 500-pound JDAM that minimizes collateral damage. The marines hit buildings, barriers, and even roadblocks with JDAMs.

Earlier, in Afghanistan, loitering US aircraft stocked with JDAMs proved highly effective in attacking the Taliban ground forces that chose to stand and fight rather than melt away into the bleak landscape.

In fact, JDAMs were in such demand in Afghanistan that, by mid-December 2001, following nine weeks of air strikes, the US Air Force had dropped 5,000 of them, using up about half the inventory. Boeing's facility in St. Charles, Mo., had to go to three shifts to rebuild JDAM stocks.

The rest is history. The Air Force has now used nearly 20,000 JDAMs, which are prized for their cost-effectiveness. Virtually all US warplanes can carry them.

Currently, the guidance kit is available in variants that fit everything from the 2,000-pound Mk 84 down to the 500-pound Mk 82. The new 250-pound Small Diameter Bomb itself draws on JDAM concepts for its guidance system.

A JDAM can be launched as much as 15 miles distant from its target, in any weather. Once released, the inertial navigation system takes over, autonomously steering the bomb toward pre-entered coordinates. Location information beamed down from GPS satellites updates and corrects the course of the weapon.

By itself, the INS system can steer a JDAM within 100 feet of a target at least half the time. With the help of GPS, this circular error probable is reduced to about 40 feet, and the weapons often land a single bomb-length away from their target.

JDAMs can be launched from high or low altitude. They can be released from a dive or level flight or be tossed from a climbing aircraft. Future versions of the weapon might have wings, for extended range. The addition of wings would extend JDAM range by 300 to 400 percent, adds Cerrato.

More Firsts

JDAM keeps scoring firsts. For instance, last May a B-1B for the first time dropped a JDAM in combat, hitting a Taliban compound near Kandahar, Afghanistan, with a 500-pound GBU-38. Carrier-based Marine AV-8B Harriers employed JDAMs for their first time that same month.

Another GBU-38 was one of the two bombs dropped on a mujahedeen safe house near Baquba, Iraq, on June 7, killing the notorious leader of al Qaeda in Iraq, Abu Musab al-Zarqawi.

JDAM and other near-precision and precision weapons are more valuable than ever, now that the chief adversaries of the United States are terrorists, say Air Force officials. As in the Zarqawi strike, air weapons can destroy their safe houses without destroying their surrounding neighborhoods.

"The incredible precision of the munitions we've developed helps to ensure collateral damage is kept to a minimum," said Maj. Gen. Jeffrey R. Riemer, commander of the Air Armament Center at Eglin, after Zarqawi's death.

One upgrade that might loom in the weapon's future is the addition of a laser. The JDAM Squadron at Eglin is working with the Navy on laser seeker technology. Boeing is funding some of the work.

Lasers would make JDAM a multimode weapon. US aircraft now often fly patrols without knowing what their eventual targets might be, making such flexibility a virtue.

Laser-capable JDAMs would mean that aircraft could carry one kind of munition. Lasers would let JDAMs track moving targets, as well as targets for which the US does not have exact coordinates.

The JDAM Squadron is also considering the addition of a data link; this would allow the weapon's course to be updated by data from E-8 Joint Surveillance Target Attack Radar System aircraft.

The newly operational Small Diameter Bomb, which is also GPS guided, has wings. It can penetrate 13 feet of concrete from a distance of 70 miles.

In May, an F-22A performed the highest and fastest delivery of a JDAM ever. The test featured the release of a 1,000-pound weapon dropped from 50,000 feet, with the airplane traveling at Mach 1.5.

The transition from bomb bay to supersonic air stream is "quite a dramatic one," noted the JDAM chief engineer, and it took a lot of effort to get the dynamics right.

The F-22 weapon system will be crucial to the Air Force for years to come, and it will expand JDAM production even further.

Current plans call for a buy of at least 230,000 JDAMs, and the 250-pound Small Diameter Bomb promises even more flexibility in a less-destructive package.

"We've produced many more than we originally anticipated," Cerrato said. "That's very unusual in this business." ■

Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, *is a longtime defense correspondent and a contributing editor to* Air Force *Magazine. His most recent article, "Curtain Up on Space Modernization," appeared in the December 2005 issue.*

The Keeper File

Truman Reports, "It Is an Atomic Bomb"

On Aug. 6, 1945, President Harry S. Truman was aboard the cruiser USS Augusta, *sailing from Europe to the US after the key wartime conference at Potsdam. Someone handed him a secret message from Henry L. Stimson, his Secretary of War. It said the US had just blasted Hiroshima with an atomic weapon.*

Soon, the story of the bomb and the Japanese city was announced to the world. At 11 a.m. (Eastern time), Eben A. Ayers, acting White House press secretary, distributed a stunning, 1,160-word release. It had been drafted before Truman left for Potsdam. As Ayers passed out copies, he told reporters, "I have got what I think is a darn good story."

Soon, radio stations began airing the story, informing Americans that the US had employed a strange new weapon. Truman said, for the first time, "It is an atomic bomb."

THE WHITE HOUSE
Washington, D.C.

IMMEDIATE RELEASE
Statement by the President of the United States

Sixteen hours ago, an American airplane dropped one bomb on Hiroshima and destroyed its usefulness to the enemy. That bomb had more power than 20,000 tons of TNT. It had more than two thousand times the blast power of the British "Grand Slam," which is the largest bomb ever yet used in the history of warfare.

The Japanese began the war from the air at Pearl Harbor. They have been repaid many fold. And the end is not yet. With this bomb, we have now added a new and revolutionary increase in destruction to supplement the growing power of our armed forces. In their present form these bombs are now in production and even more powerful forms are in development.

It is an atomic bomb. It is a harnessing of the basic power of the universe. The force from which the sun draws its power has been loosed against those who brought war to the Far East.

Before 1939, it was the accepted belief of scientists that it was theoretically possible to release atomic energy. But no one knew any practical method of doing it. By 1942, however, we knew that the Germans were working feverishly to find a way to add atomic energy to the other engines of war with which they hoped to enslave the world. But they failed. We may be grateful to Providence that the Germans got the V-1s and V-2s late and in limited quantities and even more grateful that they did not get the atomic bomb at all.

The battle of the laboratories held fateful risks for us as well as the battles of the air, land, and sea, and we have now won the battle of the laboratories as we have won the other battles.

Beginning in 1940, before Pearl Harbor, scientific knowledge useful in war was pooled between the United States and Great Britain, and many priceless helps to our victories have come from that arrangement. Under that general policy, the research on the atomic bomb was begun. With American and British scientists working together, we entered the race of discovery against the Germans. ...

We have spent two billion dollars on the greatest scientific gamble in history—and won. ... What has been done is the greatest achievement of organized science in history. It was done under high pressure and without failure.

We are now prepared to obliterate more rapidly and completely every productive enterprise the Japanese have above ground in any city. We shall destroy their docks, their factories, and their communications. Let there be no mistake; we shall completely destroy Japan's power to make war. ...

If they do not now accept our terms, they may expect a rain of ruin from the air, the like of which has never been seen on this earth. Behind this air attack will follow sea and land forces in such numbers and power as they have not yet seen and with the fighting skill of which they are already well aware. ...

The fact that we can release atomic energy ushers in a new era in man's understanding of nature's forces. Atomic energy may in the future supplement the power that now comes from coal, oil, and falling water, but at present it cannot be produced on a basis to compete with them commercially. Before that comes, there must be a long period of intensive research.

It has never been the habit of the scientists of this country or the policy of this government to withhold from the world scientific knowledge. Normally, therefore, everything about the work with atomic energy would be made public.

But under present circumstances, it is not intended to divulge the technical processes of production or all the military applications, pending further examination of possible methods of protecting us and the rest of the world from the danger of sudden destruction.

I shall recommend that the Congress of the United States consider promptly the establishment of an appropriate commission to control the production and use of atomic power within the United States. I shall give further consideration and make further recommendations to the Congress as to how atomic power can become a powerful and forceful influence towards the maintenance of world peace. ■

"Statement by the President of the United States"
President Harry S. Truman
Release on Use of the Atomic Bomb
Washington, D.C.
Aug. 6, 1945

Find the full text on the Air Force Association Web site
www.afa.org
Air Force **Magazine**
"The Keeper File"

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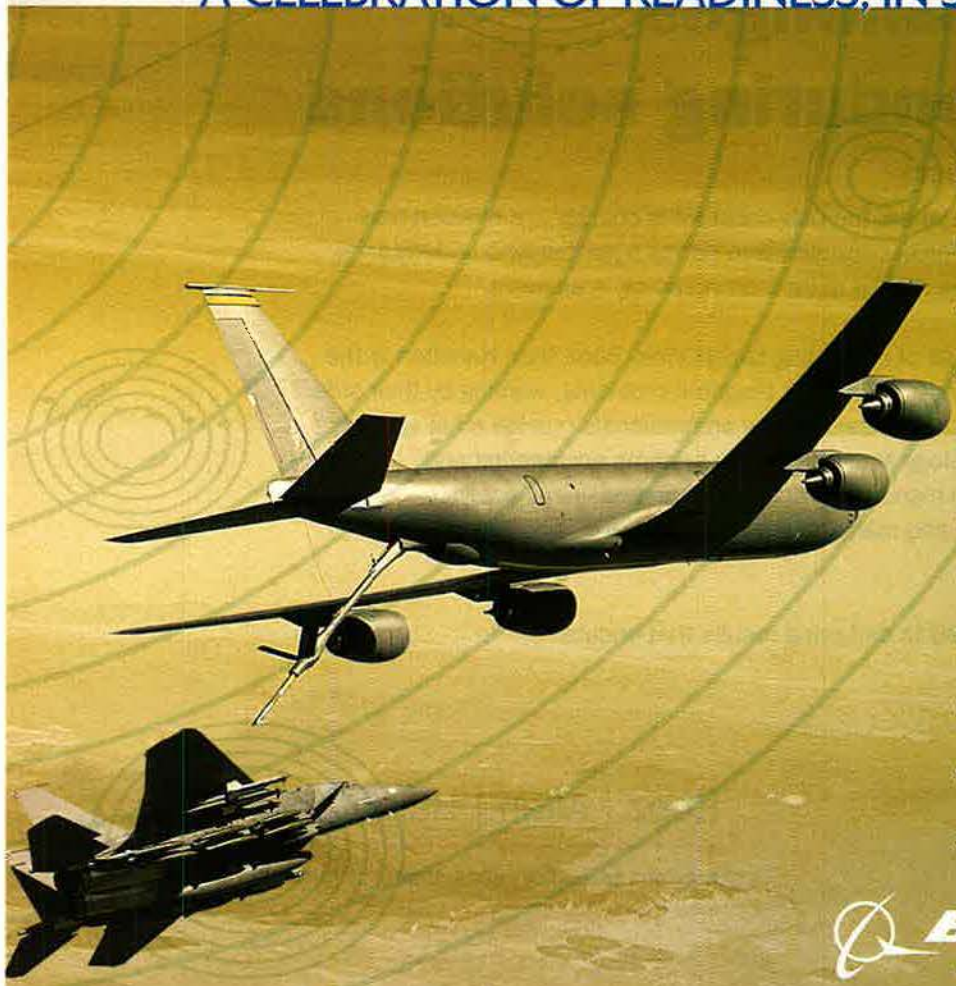

We're proud to salute the United States Air Force on two remarkable milestones: the 25th anniversary of the KC-10 and 50th anniversary of the KC-135. These two aircraft, both built and sustained by Boeing, remain the cornerstone of America's strategic refueling capability. Their enduring performance and continued readiness is a testament to the commitment of their crews and all who support them.

BOEING
Forever New Frontiers

Lt. Gen. Craig McKinley, head of the Air National Guard, looks at ANG's promise and problems.

An Air Guard for the Future

By Marc A. Schanz, Associate Editor

Lt. Gen. Craig R. McKinley, *vice chief-air of the National Guard Bureau, is the Air National Guard's top uniformed leader. He was confirmed for that post in May. On July 11, he met with* Air Force *Magazine to discuss a broad range of topics. What follows are excerpts of his remarks.*

USAF photo by SSgt. Matt Schwartz

At Kunsan AB, South Korea, an F-16 belonging to the Air National Guard's 150th Fighter Wing is guided into place by a crew chief. Right now, retention is not a problem for the Guard.

Troop Cut Question

"We want to be a team player in efforts of our Air Force to right-size [with a planned cut of 40,000 personnel over five years]. We would like to take a look at our organization to make sure we are able to [absorb cuts], if we have to do that. ... We're trying to hold the line on manpower right now, because we feel we have a capacity to accept many of the active duty component members who may be displaced during their downsizing. ... This will revitalize our Air National Guard, and this will allow members of our active component to continue serving."

Current Mission Load

"We have 16 sites on air sovereignty alert here in the United States [at which] the duty is being performed by Air National Guard men and women, in both maintenance and operations. ... Those units are continuing to serve in the Air and Space Expeditionary Force overseas, while maintaining 24-hour-a-day alert here in the [continental United States]. It hasn't overstretched the units."

Meeting the Optempo Test

"Our members have been called to duty since the late '80s with the war on drugs, where our units were involved in Central and South America. ... We were fully engaged in Desert Shield and Desert Storm. We've been fully engaged in the Balkans. We've been fully engaged in the no-fly-zone efforts. We've been fully engaged in the efforts since Sept. 11, 2001, in the defense of our homeland. I have not had one member come to me and say they can't do it, or do more."

Soaring Retention

"The [high operational] tempo, which I know is being discussed in the press and elsewhere, has not manifested itself in large numbers of people leaving us. In fact, our retention rates are very high."

Dip in Recruiting

"Our recruiting numbers this year are not as good as I would like to see. I attribute much of that to the resulting outflow from [the 2005 Base Realignment and Closure round]. ... Units don't know what their future missions are going to be. Once we again define for those units what they

persistent awareness.

Remotely operated aircraft systems produced by General Atomics Aeronautical Systems are routinely operated over world trouble spots. With the precision capability to detect, identify, track, and even strike time-sensitive targets instantly, the USAF Predator and Predator B fly missions beyond the capabilities of manned aircraft. The multi-mission Predator B, equipped with electro-optical/infrared (EO/IR) streaming day and night video and Lynx Synthetic Aperture Radar (SAR), provides unparalleled surveillance support to ground forces.

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will be doing, I'm confident that our recruiting numbers will come back."

Angst in the Air Guard

"We're in the middle of a very transformational era. There's no doubt. And there's a lot of angst in the field about what's going to happen. Throughout that angst, the adjutants general and the chief of the National Guard Bureau [Army Lt. Gen. H. Steven Blum] are deeply concerned about communicating directly to those members ... that their service is of value to us and that we will look at all avenues to continue their service."

Light at Tunnel's End

"We challenge all our members to understand that, ... through technology, through transformation, through efficiency, we are going to undergo change. ... We have had exceptionally good support from the Air Force in looking for future missions that are tailored for members of the National Guard."

Route to Survival

"In the case of North Dakota, what was a tremendous fighter unit at Fargo—the 119th FW— ... will [be replaced by] a Predator unit being stood up at Hector Field in Fargo. Other Air National Guard members are moving to Grand Forks to help with a Global Hawk mission. We see that the units that are able to understand and adapt to the changes can find that they not only have missions in their traditional hometowns but they also are expanding into missions in new areas."

ANG Operational Prowess

"[Force] integration has resulted in success stories such as the recent success with the Zarqawi bombing [i.e., the June 7 F-16 attack that killed al Qaeda terrorist Abu Musab al-Zarqawi in Iraq]. That was a Total Force effort. Everybody played. We all were part of that operation. Much of it is still classified, but I will just say that, once that comes to the light of day, you will find how integrated our Air Force is."

Deeper Integration

"In terms of planes, in terms of people, in terms of mission, [integration] should only get stronger [because of] further constraints on our budget ... and [because] the Air National Guard and the Air Force Reserve have such a strong ability to contribute to this effort in the Global War on Terror."

Faith in the Air Force

"If we have a strong Air Force, we'll have a strong Air National Guard and Air Force Reserve. I'm confident that, as we look at recapitalization of our Air Force, our Air Force will meet the needs of its reserve components."

C-130 Traffic Jam

"In the C-130 community, ... we need to do a better job of providing assets for the Global War on Terror [while] retaining enough force at home so that the governors and the adjutants general can use them in times of crisis. ... I don't deny that there are weapons systems and platforms that are stressed, but ... we will continue to look at ways to make sure we don't disadvantage certain units or people."

Wary Adjutants General

"I had a great meeting with [the Guard adjutants general] in Williamsburg [Va.]. ... I spoke directly to them and we put our issues on the table. One of them was a concern that the adjutants general felt they had been somewhat left out of the recent BRAC process."

USAF photo by SrA. Brian Ferguson

SrA. Derrick Farr performs surveillance and identification procedures for aircraft flying near Balad AB, Iraq. Farr is an Air Guardsman deployed to Iraq from Savannah, Ga.

Closer Consultation

"We have [proposed] to integrate one of the directorate staffs in the Air Force [headquarters] with Air National Guard, Air Force Reserve, and active duty personnel. I chose A-8, strategic plans and programs, because that's where all decisions get started and where funding is attached to decisions that are approved by the Chief. If we can fully integrate in that one directorate—and I mean to bring in ANG members to be full-time members of [the A-8] staff—we can get in early in the decision-making process. ... I think that's a great place to start. ... We're going to do that immediately."

Air Defense Requirements

"There are new and more sophisticated methods of [enemy] attack that we have to stay on top of, and we'll need fighters with very sophisticated radars to do that, but our Air Force understands that need, and Air Combat Command, working closely with our A-3 here at the National Guard Bureau, has a roadmap by which we should be successful in fielding the right types of equipment prior to those threats manifesting themselves. ... The evolution of the fighter force structure that is supporting Noble Eagle ... is on track and we should meet the demands and challenges that may present themselves at the end of this decade and the beginning of the next. By that, I mean cruise missile threats, small-size targets, low observables, things like that."

Adjusting the Laws

"Senior leadership in the Guard, the Reserve, and OSD are tackling ... tough issues of Title 10 and Title 32 in a way which should make it far more easy to operate in a command and control environment in the future with leadership of active duty members and Guard members in the same unit. And it will also let us do missions that are federal missions in state status when we provide those members the protections of Title 10 when they're needed to perform a federal mission. It's not complete, it's not done, but we're making progress." ■

The Quadrennial Defense Review shifts the emphasis to "irregular" conflict but is sketchy about force structure.

In the Wake of the QDR

By John T. Correll

In early September 2001, the Quadrennial Defense Review for that year was in the final stages of completion. There was no mystery about what it was going to say. The details had been dribbling out all through the summer in Pentagon statements and preliminary documents.

The QDR would call for the armed forces to be sized, structured, and equipped to deter aggression in four critical theaters (Europe, northern Asia, the East Asian littoral, and the Middle East/Southwest Asia), defeat aggression in two theater wars simultaneously, and win decisively in one of them. The standard was dubbed "4-2-1."

Before the QDR could be published, though, it was overcome by events. On Sept. 11, airliners hijacked by terrorists crashed into the World Trade Center in New York and into the Pentagon in Washington.

The nation's defense priorities changed in an instant and the United States declared a Global War on Terrorism. The QDR was hastily patched and released on Sept. 30. The force sizing standard was modified and relabeled "1-4-2-1," the added initial "1" referring to homeland defense.

The revisions were as good as the Pentagon could manage, but QDR 2001 was rooted in a time that was now past. Fundamental changes to the QDR would have to wait for the next review, four years later.

Speculation about QDR 2005 began early. A 2004 briefing paper leaked to the news media described diminishing concern about "traditional" war. According to anonymous sources, the two-war standard would be junked. Reporters obtained a draft decision paper that proposed cutting Air Force and Navy budgets to give more money to the Army and the Marine Corps. The *Inside the Pentagon* newsletter quoted a defense official as saying the next QDR would present "a very infantry-centered view of the future."

In the conventional wisdom that formed, the war on terrorism was the domain of the ground forces. Among those pushing this view were hard-core ground power advocates, who felt that the strategies of the 1990s and previous QDRs had given too much credit to airpower and that the ground forces had been slighted.

Also weighing in were the perennial defense cutters who saw a chance to kill defense programs they hated, especially the Air Force's F-22 fighter. The Army's Future Combat Systems, the second most expensive program in the defense budget, was sometimes mentioned, but mostly the critics concentrated their fire on the F-22.

The Critics Disappointed

When the QDR was published in February 2006, it identified "irregular" warfare as the predominant form of conflict and called for an increase in Special Forces. However, it also recognized that traditional conflict was still a possibility and it kept the two-war force-sizing standard, with modification.

The QDR did cut the Air Force Ac-

Workers assemble an F-22 under production in Marietta, Georgia. The QDR extended F-22 production to 2010, the projected start date of F-35 production.

tive duty end strength would stabilize around 40 percent below the 1990 level. The F-22 program survived—as did the big development programs of the Navy and the Army—although in reduced numbers.

That wasn't what the critics wanted. The *Washington Post* accused Secretary of Defense Donald H. Rumsfeld of "flawed vision" and dodging the hard decisions. "What gives?" columnist Max Boot asked in the *Los Angeles Times*. "Why is the Pentagon still throwing money into high-tech gadgets of dubious utility while ignoring the glaring imperative for more boots on the ground?"

Earlier, in testimony to a subcommittee of the House Armed Services Committee, Loren Thompson of Lexington Institute reached a different conclusion. "The US Army is incapable of surviving, much less prevailing, without overhead cover provided by the Air Force," he said. "It is myopic to think that money spent to control airspace somehow detracts from Army effectiveness. It makes Army effectiveness possible."

QDR 2005 also called for a 50-percent increase in long-range air strike capability, but that did not seem to inflame the critics the way the F-22 did, possibly because there is no aircraft development program to implement the long-range strike forecast.

The Long War

Above all else, QDR 2005 is a reflection of the Global War on Terrorism. The definition of that conflict—which the QDR calls "the Long War"—has evolved through several stages.

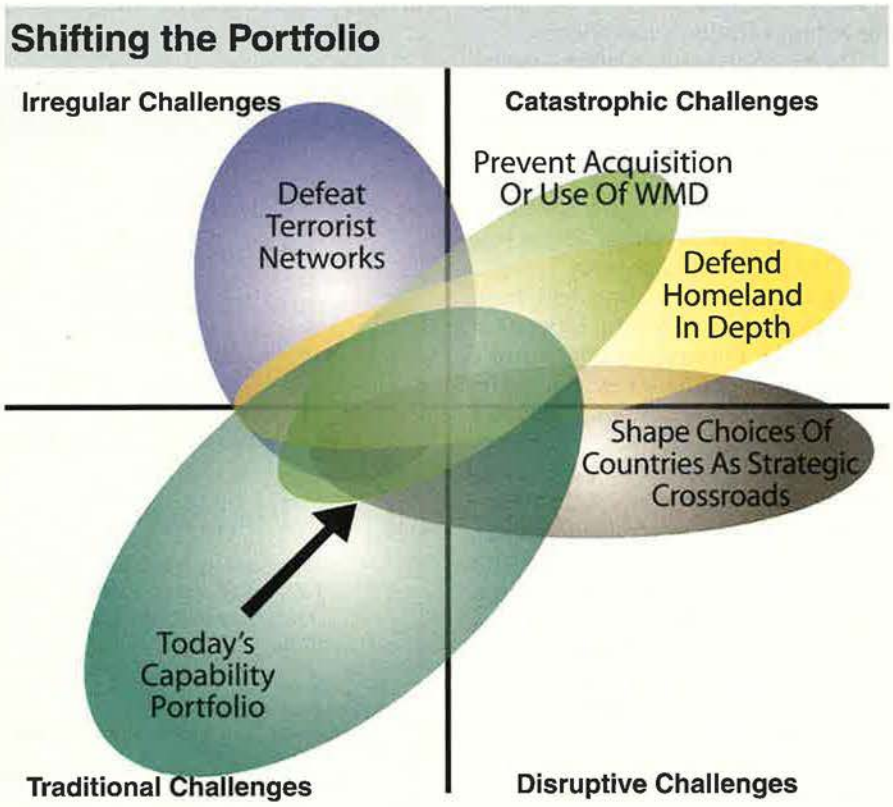
In September 2001, President Bush said the adversary was "a collection of loosely affiliated terrorist organizations known as al Qaeda," which "is to terror what the Mafia is to crime." Military aircraft began around-the-clock combat air patrols above Washington, New York, and a dozen other cities.

The first offensive action was Operation Enduring Freedom, which began Oct. 7 with air strikes in Afghanistan. By December, it had ousted the Taliban regime, which had given sanctuary to al Qaeda and its leader, Osama bin Laden, and had the terrorists on the run. The air campaign tapered off in January as the military emphasis shifted to the ground, with airpower in support.

Meanwhile, letters containing anthrax had been sent through the US mail to Florida and New York news offices and to two Senate offices in Washington. Enclosed messages appeared to be from terrorists. This added to fears that the terrorists had access to weapons of mass destruction.

The war on terrorism moved into its second phase when President Bush in his State of the Union address in January 2002 broadened the declared threat to include acquisition of biological and nuclear weapons by terrorists and hostile regimes. The specific threat, he said, was an "Axis of Evil," consisting of North Korea, Iran, and Iraq.

James Mann, in *Rise of the Vulcans: The History of Bush's War Cabinet,*



As this diagram from the QDR shows, the Pentagon plans to shift its portfolio of capabilities to address irregular, catastrophic, and disruptive challenges while sustaining capabilities to address traditional challenges.

Service End Strength: Past, Present, Future

	1990	2005	2011 (QDR)
Total Active Duty	2,065,000	1,389,000	
Air Force	535,000	354,000	319,000
Army	751,000	493,000	482,000
Navy	582,000	363,000	
Marine Corps	197,000	180,000	175,000
Selected Reserves	1,128,000	821,000	
Civilians (full-time equiv.)	997,000	653,000	

Source: Air Force Magazine, ODR 2005

The QDR projected 2011 levels at which the active duty Air Force, Army, and Marine Corps will "stabilize," but did not give end strength numbers for the Navy, Guard, and Reserve forces, or civilian employees.

summarized the change: "Thus over a period of less than five months the Administration had progressively shifted the focus of the war on terrorism from (a) retaliating against the perpetrators of the Sept. 11 attacks to (b) stopping terrorists from acquiring weapons of mass destruction to (c) preventing states from supplying terrorists with these weapons."

The State of the Union address, Mann said, "set the Bush Administration on a new course. Hunting terrorists was de-emphasized, at least in public; instead, stopping rogue states from developing weapons of mass destruction became the Administration's top priority."

The third phase of the conflict—targeting Saddam Hussein's regime in Iraq—emerged gradually. The concern with Iraq was the conviction that Saddam had weapons of mass destruction and would supply them to the terrorists. Saddam's defiance of UN weapons inspectors added to the sense of urgency.

Regime change in Iraq had been US policy since the Iraq Liberation Act of 1998. Furthermore, the world's intelligence agencies were said to be unanimous in the view that Iraq had weapons of mass destruction.

Congress authorized the use of force against Iraq in October 2002. A consensus to disarm Iraq formed, and the fourth phase of the conflict began with Operation Iraqi Freedom, the invasion of Iraq, in March 2003. Coalition forces swept into Baghdad and Saddam fled. The coalition soon captured Saddam but did not find any weapons of mass destruction.

Conventional military operations ended and the war entered the fifth phase—with emphasis on peacekeeping and nation building in Iraq and Afghanistan—which continues today.

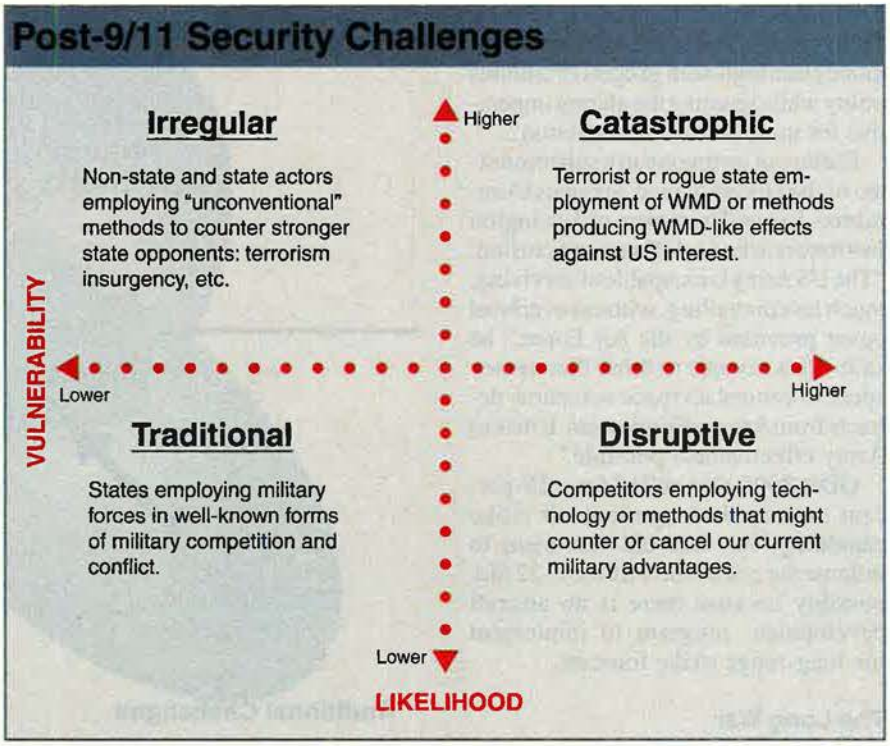
A number of critics charge that the war on terrorism was sidetracked by Operation Iraqi Freedom. Among them is Marine Corps Lt. Gen. Gregory S. Newbold, director of operations for the Joint Chiefs of Staff from 2000 to 2002. He said, "I now regret that I did not more openly challenge those who were determined to invade a country whose actions were peripheral to the real threat—al Qaeda."

President Bush says that Iraq is pivotal to the war on terrorism. "It's important for Americans to understand the stakes in Iraq," he said in a speech in April. "A free Iraq will be an ally in the war on terror. A free Iraq will be a partner in the struggle for peace and moderation in the Muslim world. A free Iraq will inspire democratic reformers from Damascus to Tehran and send a signal across the broader Middle East that the future belongs not to terrorism but to freedom. A free Iraq will show the power of liberty to change the world. And as the Middle East grows in liberty and prosperity and hope, the terrorists will lose their safe havens and recruits, and America and other free nations will be more secure."

In a related development, DOD declared "stability operations" to be a core military mission with "priority comparable to combat operations."

The popular, news media image of the war on terrorism is of localized ground action, mostly in Iraq, against bands of partisan irregulars. Overlooked in that depiction is that the first two actions were against states, employed large numbers of military forces—conspicuously including airpower—and achieved the goal of regime change in Afghanistan and Iraq.

Also forgotten, apparently, was the experience of October 2001 when the counteroffensive against the terrorists in Afghanistan began. The emphasis was on airpower, and within weeks, critics were saying that the campaign was bogged



The challenges most likely to occur—such as irregular warfare—are those in which US vulnerability is lowest. Those in which vulnerability is highest—such as "disruptive" challenges—are least likely to occur.

Origins of the Quadrennial Defense Review

The Quadrennial Defense Review grew out of a recognition by Congress in 1996 that the defense program was seriously out of balance. The armed forces were not sized or funded to carry out the declared national strategy.

The defense authorization act for Fiscal Year 1997 directed the Secretary of Defense to conduct, every four years, a "Quadrennial Defense Review" to address the imbalance. Subsequent legislation directed that the QDR take a 20-year perspective.

The QDR did not attract much notice at the time. When President Clinton signed the Fiscal 1997 authorization bill into law, the White House issued a three-page statement on various aspects of it. The QDR was not mentioned.

That changed. The QDR has become a center-ring event in the world of defense planning and draws an enormous amount of attention and comment.

No special authority is reserved for the QDR. Anything that the QDR can do can also be done in between reviews by the regular process of government. For example, the Bush Administration's pre-emption strategy in June 2002 was implemented between QDRs.

down, airpower was not working, and that our best hope would be a ground offensive with as many as 250,000 US ground troops the following spring.

The critics were wrong. Airpower, assisted by US spotters on the ground, hammered the enemy positions and the defenses crumbled. Afghan irregulars, supported by airpower and US special forces, swept south, and by November, were in control of the country.

Strategic Shift

The QDR recognized four kinds of conflict:

Irregular: Terrorism, insurgency, and other forms of nonconventional conflict featuring unconventional means. Examples are Iraq and Afghanistan.

Catastrophic: Attacks that result instantaneously in unacceptable levels of destruction. Examples are Pearl Harbor and 9/11. Includes terrorists or rogue states employing weapons of mass destruction or producing WMD-like effects.

Disruptive: Development by competitors of technology, methods, or capabilities that would counter or cancel current US military advantage.

Traditional: Familiar forms of war fought by conventional forces in which the enemy is a state.

Of these, "irregular warfare has emerged as the dominant form of warfare confronting the United States, its allies, and its partners." The challenges most likely to occur are the ones in which US vulnerability is lowest, and vice versa. This assessment is depicted on a matrix known as the "Quad Chart," which was widely used in QDR discussions and presentations, but which does not appear in the QDR itself.

The Quad Chart showed up regularly in the news. *Washington Post* columnist David Ignatius called it "a powerful intellectual weapon" and "bad news" for the Navy and the Air Force because it "suggested that the imminent danger to America came from al Qaeda" rather than the kinds of war that justified their budgets.

In fact, the inverse relationship in war between the level of violence and the probability of occurrence is a familiar military concept. For good reason, defense strategies have put more attention to the threats that posed the greatest danger than on the lesser threats that were more likely to occur.

The QDR says specifically that the single biggest threat to the United States is Iran. China, North Korea, and the Hamas regime in Palestine are also potential problems. All of them are formal states, with governments, capitals, and organized armed forces.

For all of its focus on the emergence of irregular warfare, QDR 2005 was careful to preserve the standard—as the two previous QDRs had—that US armed forces should be able to fight two overlapping regional conflicts.

The Two-War Problem

In the 1960s, the United States followed what was then called the "two-and-a-half war strategy." The specification was for a conventional force that could (1) conduct an initial 90-day defense of Europe against a Soviet attack, (2) simultaneously meet an all-out Chinese attack in Asia, and (3) handle a regional contingency.

The force never came close to meeting that ambitious goal, and believing that a realistic objective would be of more value, the Nixon Administration in 1970 switched to a one-and-a-half war strategy. The peacetime conventional force would be prepared for one major communist attack, either in Europe or in Asia, and a major regional contingency elsewhere.

In 1982, Secretary of Defense Caspar W. Weinberger rejected numerical standards as "mechanistic" and adopted instead a no-number approach in which, he said, "our long-range goal is to be capable of defending all theaters simultaneously."

That was the policy until the Bottom-Up Review in 1993, when Secretary

AP photo by Bilal Hussein

Armed Iraqi insurgents battle coalition forces on the streets of Ramadi in 2005. The QDR increases the emphasis the Defense Department places upon defeating terrorist networks.

Fiscal Year 2007 USAF Total Force

	FY07	Change from FY06
Military	**516,100**	**-16,500**
Active	334,200	-17,600
Guard	107,000	+200
Reserve	74,900	+900
Civilian	**167,184**	**+427**

Source: Air Force budget briefing, Feb. 6, 2006

Thirty-five percent of the Air Force's current military strength is in the Guard and Reserve.

of Defense Les Aspin was desperately searching for a strategy that would fit with his ill-fated decision to cut the defense budget before calculating the feasibility and consequences. (See "The Legacy of the Bottom-Up Review," October 2003, p. 54.)

Unable to get Congress to consent to anything less, Aspin set the force sizing standard as the capability to fight two major regional conflicts simultaneously. That, however, had nothing to do with the two-and-a-half war strategy of the 1960s, in which the "half war" was the major regional conflict in Vietnam. Aspin's yardstick was equivalent to about a fifth of the 1960s standard.

In 1996, prior to Congressional creation of the QDR, there was a clamor to abandon the two-war standard on the grounds that it was excessive and unaffordable. Upon further consideration, QDR 1997 kept the two-war standard, as did QDR 2001. To the surprise of those who thought the two-conflict standard was done for in QDR 2005, it survived again, although in modified form.

"During this QDR, senior leaders confirmed the importance of the main elements of that force planning construct: maintaining the ability to defend the US homeland; continuing to operate in and from forward areas; and above all, the importance of maintaining capabilities and forces to wage multiple campaigns in an overlapping time frame—for which there may be little or no warning of attack," QDR 2005 said.

The new force planning construct, however, represents a significant change. The size and structure of the force will be based on three "objective areas":

- Defend the homeland.
- Prevail in the war on terror and conduct irregular operations.
- Conduct and win conventional campaigns.

Both "steady state" and "surge" requirements will be established for each of these three focal points. The main determinant for sizing the force will be the steady state requirement, which includes "Long War" operations against terror networks.

The two-war requirement is part of the conventional campaign category, and it is a surge requirement, not a steady state capability. After a surge in time of crisis, the force is to be able to "wage two nearly simultaneous conventional campaigns (or one conventional campaign if already engaged in a large-scale, long-duration irregular campaign), while selectively reinforcing deterrence against opportunistic acts of aggression. Be prepared in one of the two campaigns to remove a hostile regime, destroy its military capacity, and set conditions for the transition to, or for the restoration of, civil society."

Force Structure Questions

QDR 2005 left many questions unanswered. Previous QDRs had included details about force structure—fighter wings, strategic forces, bombers, land divisions and brigades, warships, submarines, and so forth—but the current report is sketchy in that respect.

The review made no sweeping changes in the size of the armed forces. The general conclusion was that force size was about right, but that the mix of capabilities was disproportionately skewed toward conventional operations.

The QDR introduced further ambiguity with its decision to "organize the Air Force around 86 combat wings (e.g., fighter, bomber, ISR/battle management/command and control, mobility, air operations centers, battlefield airmen, other missions and space/missile) with emphasis on leveraging reachback to minimize forward footprints and expedite force deployments."

The Air Force today has about 81 combat wings. This new way of counting Air Force units is not compatible with decades of historical data, and the change discourages direct comparison of past and future force structure. It is unlikely that this is a coincidence.

The Pentagon was somewhat more forthcoming about changes for the Army. Rumsfeld said, "The centerpiece of the Army reorganization plan is a shift away from a structure based on large divisions—the 'building block' of the Army since World War I—into an active and reserve force configured into 70 more capable combat brigades and over 200 support brigades—all fully manned and fully equipped."

Total Force

In 1970, Secretary of Defense Melvin R. Laird announced a "Total Force concept," in which capabilities of the National Guard and Reserve were incorporated, along with those of the active forces, in all aspects of planning and budgeting. In 1973, Secretary of Defense James R. Schlesinger upgraded the concept to the Total Force policy.

QDR 2005 broadened the definition

Budget Shares

	2005	2006	2011
Air Force	29.3%	30.2%	28.7%
Army	24.9%	24.1%	24.9%
Navy	29.8%	29.8%	29.8%
Defense Agencies	16.0%	15.8%	16.6%

Source: Dept. of Defense and Air Force Magazine

The QDR and other deliberations have not made a big change in the percentage shares of the services in the defense budget. Air Force outlays would decline by about 1.5 percentage points.

of the Total Force to include not only the active and reserve military components but also civilians and contractors. The QDR cited "the need to rebalance military skills between and within the active and reserve components" and said that "joint force commanders need to have more immediate access to the Total Force.

"In particular, the reserve component must be operationalized, so that select reservists and units are more accessible and more readily deployable than today," the QDR said. "During the Cold War, the reserve component was used, appropriately, as a 'strategic reserve,' to provide support to active component forces during major combat operations. In today's global context, this concept is less relevant."

QDR findings on Total Force fed into a heated argument, already in progress, about the relationship of the active force and the National Guard. Guard units have three identities—as Total Force components of the military services, as elements of the National Guard, and as assets of their home states—that are sometimes in conflict.

As the armed forces diminished in size and closed bases and facilities, there were repeated clashes about the effect of the drawdown on Guard units. The Air Force was an early and enthusiastic supporter of the Total Force policy and had put a considerable part of its prime force structure into the Guard and Reserve. The partnership began to fray in 2005 as state governors and the National Guard Bureau bridled at actions proposed by the Air Force in the reduction, reshaping, and relocation of Air National Guard units. (See "Total Force Turbulence," October 2005, p. 44.)

The head of the National Guard Association of the United States said that in a drawdown, "the most expensive forces (the active component) should be sacrificed first, followed by the least expensive (the Guard and Reserve)."

The Guard has always had considerable political clout, a combination of the interest by states in Guard affairs and a general popularity and support in Congress. Extensive use of the reserve components in the Global War on Terrorism has added to that leverage. In 2005, the Guard and Reserve accounted for 36 percent of the forces deployed to Iraq and Afghanistan.

It is not yet clear what the role of the reserves, especially the Army and Air National Guard, will be in the new Total Force. The National Guard caucus in Congress has proposed promoting the director of the Guard Bureau to four-star rank and giving him a seat on the Joint Chiefs of Staff. A Congressionally chartered commission on the Guard and Reserve is plowing through a number of issues and is to report back by March 2007.

Main Provisions of the QDR

The Quadrennial Defense Review was completed in 2005 and published in February 2006. The entire text is available on the Internet at www.defenselink.mil/qdr/. Following are the main provisions.

1. The Global War on Terrorism will be a "Long War" that cannot be won only or even principally by military force. Currently the struggle is centered in Iraq and Afghanistan.

2. Irregular warfare is the dominant form of warfare confronting us. Future ground forces will be as proficient in irregular operations, including counterinsurgency and stabilization operations, as they are today in high-intensity combat.

3. The QDR identifies four priorities: defeating terrorist networks; defending the homeland in depth; shaping the choices of countries at strategic crossroads; and preventing hostile states and non-state actors from acquiring or using weapons of mass destruction. These four "focus areas" are not the full range of activities the Department of Defense might have to conduct, but senior leaders regard them as "among the most pressing."

4. The new force sizing standard to replace 1-4-2-1 is based on the combined requirements for homeland defense, the war on terrorism, and conventional campaigns. The QDR retained the yardstick of fighting two major theater wars (now called "conventional campaigns") but with modifications. US forces will be structured for a surge capability to win two nearly simultaneous conventional campaigns and be prepared in one of those campaigns to remove a hostile regime and destroy its military capacity.

5. A number of findings affected the Air Force.

- The Air Force will be organized around 86 combat wings of various kinds.
- Joint air capabilities will be reoriented to favor greater range and persistence, larger and more flexible payloads, and the ability to penetrate and sustain operations in denied areas.
- Long-range strike capabilities will be increased by 50 percent, and the penetrating component of long-range strike will be increased by factor of five by 2025. A new land-based long-range strike capability will be fielded by 2018.
- Approximately 45 percent of the future long-range strike force will be unmanned.
- The F-22 fighter program will be restructured, stretching production out to Fiscal 2010 (to abut Joint Strike Fighter production, which begins in 2011). The QDR did not change the supposedly provisional 2004 decision to reduce the program from 381 aircraft to 183.
- Unmanned aerial vehicle coverage capability will be doubled with the acquisition of additional Predators and Global Hawks. An Air Force UAV squadron will be established under US Special Operations Command.
- The C-17 airlifter procurement will be capped at 180. The additional strategic airlift will be 112 modernized C-5s.
- The Department of Defense "is also considering" a KC-X tanker-airlifter aircraft.
- The E-10 intelligence-surveillance-reconnaissance aircraft was reduced to a technology demonstration program; procurement was terminated.
- The Minuteman III ICBM fleet will be reduced from 500 missiles deployed to 450.

6. By 2011, Army strength will be stabilized at 482,400 active duty (down 10,600 from current strength) and 533,000 in the reserve component. The Marine Corps will have an active force strength of 175,000 (down about 5,000 from the present level) and 39,000 in the reserve component. Air Force end strength will be reduced by 40,000 with "balanced cuts across the Total Force."

7. The Navy will "build a larger fleet that includes 11 carrier strike groups." That is one less carrier than the Navy has today. It will also deploy a precision guided conventional warhead on Trident SLBMs.

8. Special operations forces will increase by 15 percent. Psychological operations and civil affairs will be expanded.

9. The QDR redefines Total Force to include not only active and reserve military components but also civilian and contractor personnel. Reserve components will be "operationalized" to be "more accessible and more readily deployable." Their traditional Cold War role as a strategic reserve has become "less relevant" in the world of today.

Repeating the Flaw

QDR 2005 has the same basic flaw as the two previous QDRs. It was decided ahead of time that the outcome would be

USAF photo

An Air Force MH-53 drops off special operations forces. The SOF troops are particularly valuable in battling shadowy terrorist networks and will be expanded by approximately 15 percent over the next several years.

"revenue neutral." Financial constraint was not the only principle that guided QDR deliberations, but it was significant enough to prevent an uncluttered analysis of national security needs.

The defense program currently costs 3.9 percent of the Gross Domestic Product. The President and the Pentagon say the nation is at war, but this is not a wartime allocation of resources. At the peak of World War II, the nation spent 34.5 percent of GDP on the war effort. In the Korean War, it was 11.7 percent of GDP, and 8.9 percent in the Vietnam War. Even the short Gulf War of 1991 was allocated 4.6 percent of GDP.

The fears and commitment so prevalent in the days following the 9/11 attacks have faded with time. There are dark hints from Congress that the budget is not "unlimited." The *Wall Street Journal* reports that "the Pentagon's days of open checkbooks are numbered."

We will not know for certain about adequacy of the force until it is tested in actual conflicts of the future. It is also difficult to make analytical judgments because of the lack of specificity in the QDR about force structure. Even so, 3.9 percent of GDP—if that is what is meant by "unlimited"—is cutting it short.

"The Bush Administration plans a large-scale modernization effort in the coming years, the first in over two decades," said Andrew F. Krepinevich, executive director of the Center for Strategic and Budgetary Assessments. "Yet it also proposes to reduce defense spending toward the end of this decade, in part by holding down spending on personnel."

In the QDR, Krepinevich said, "the tough choices were deferred, raising doubts whether the existing defense program could be executed, let alone one including initiatives to address new threats."

With stability operations coming on line as a priority supposedly equal to that of combat operations, the Pentagon should not expect to save much money by reducing the force, which is already stressed, for the most part.

The Air Force is far below its end strength at the time of Gulf War I, and is still cutting people and programs.

Thomas Donnelly, editor of *Armed Forces Journal* and a resident fellow at the American Enterprise Institute, says that QDR 2005, like its predecessors, was worthless and that the QDR should be discontinued.

"The Quadrennial Defense Review process, from 1993 until now, has utterly failed to do what it was intended to do: provide a link among strategy, force planning, and defense budgeting," Donnelly said. "Indeed, with every QDR, the situation has gotten worse; the ends-means problem has grown."

According to Krepinevich, "Independent estimates conclude that over the long term, the defense program may be short some $50 billion a year, a shortfall that will prove difficult to erase given the Administration's plans to cut the deficit in half by 2009."

Barry M. Blechman of DFI International offered a more positive evaluation. The QDR should be regarded as "a statement of intent," and "critics who charge that the QDR offers nothing new are usually looking first for radical changes in modernization or force structure planning. While the latter constitutes an important consideration, it risks putting the cart before the horse. The first task of the QDR is to set strategic priorities in response to evolving national security circumstances. Accordingly, the QDR is a highly relevant document that codifies a number of shifts in strategic thinking."

One of the things that the QDR got right was resisting the pressure—which was considerable—to base US military posture on the short term and on a single threat. The 9/11 attacks introduced a new threat, but that did not mean the older threats had gone away.

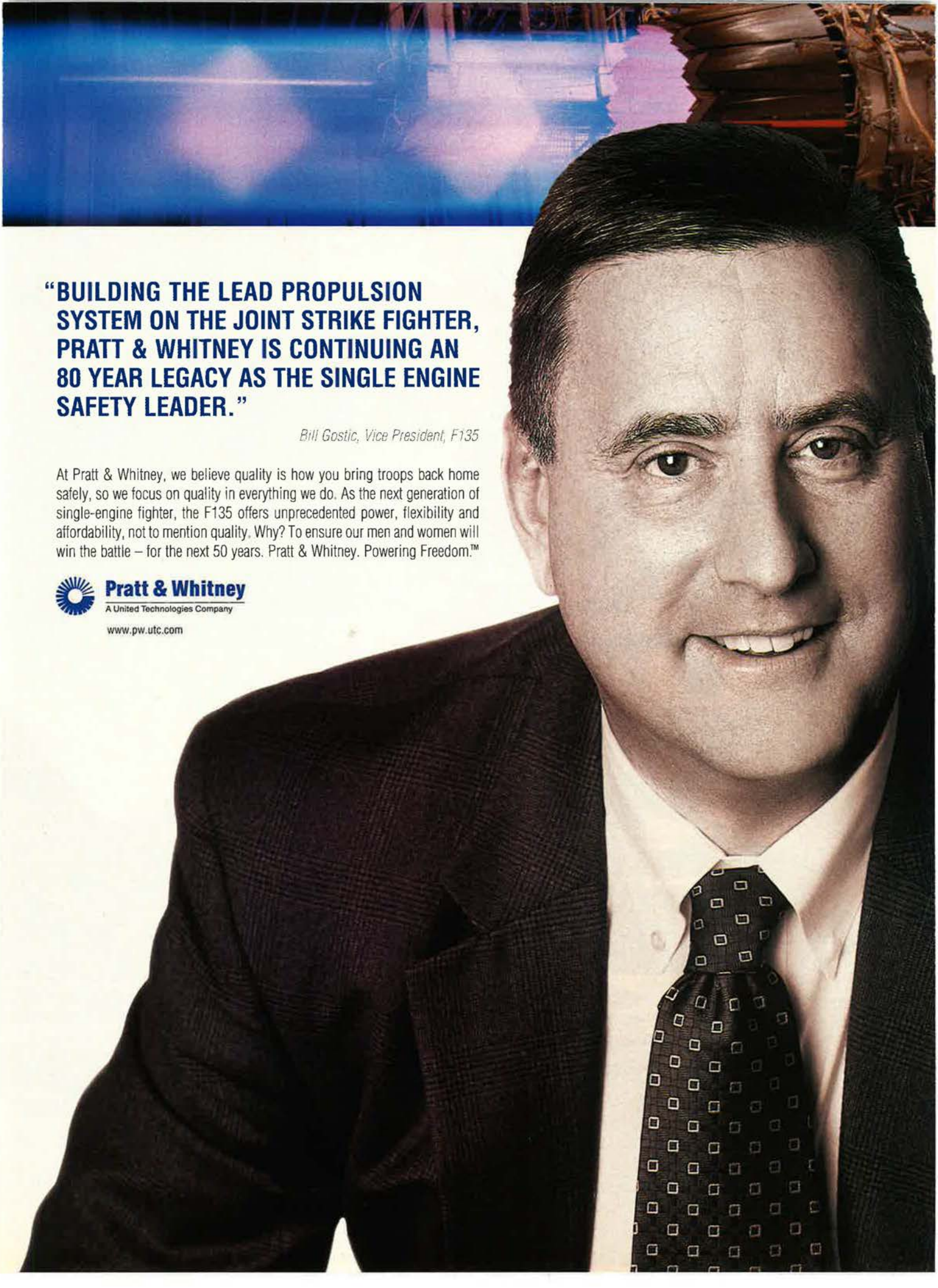
QDR 2005 confirms the principle of "capabilities-based planning." The earlier approach, threat-based planning, pegged strategy to a specific enemy and anticipated where and how the next conflict might occur. Capabilities-based planning is more flexible, concentrating on the capabilities that potential adversaries have or might obtain.

Some critics of the QDR would like to return to threat-based strategy. In their view, the threat is clear: It is global terrorism, and the defense program should be structured to deal with that, not with some unknown threat years away that might never materialize.

Ryan Henry, DOD policy chief and Pentagon point man for the QDR, explained why that is unwise and why the strategy must take a longer view that looks beyond the immediate threat.

"Within the next decade, US forces will be engaged somewhere in the world where they're not engaged today," Henry said. "We're clueless on where that's going to be, when that's going to be, or in what manner they're going to be engaged." ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributing editor. His most recent article, "Barrel Roll," appeared in the August issue.*



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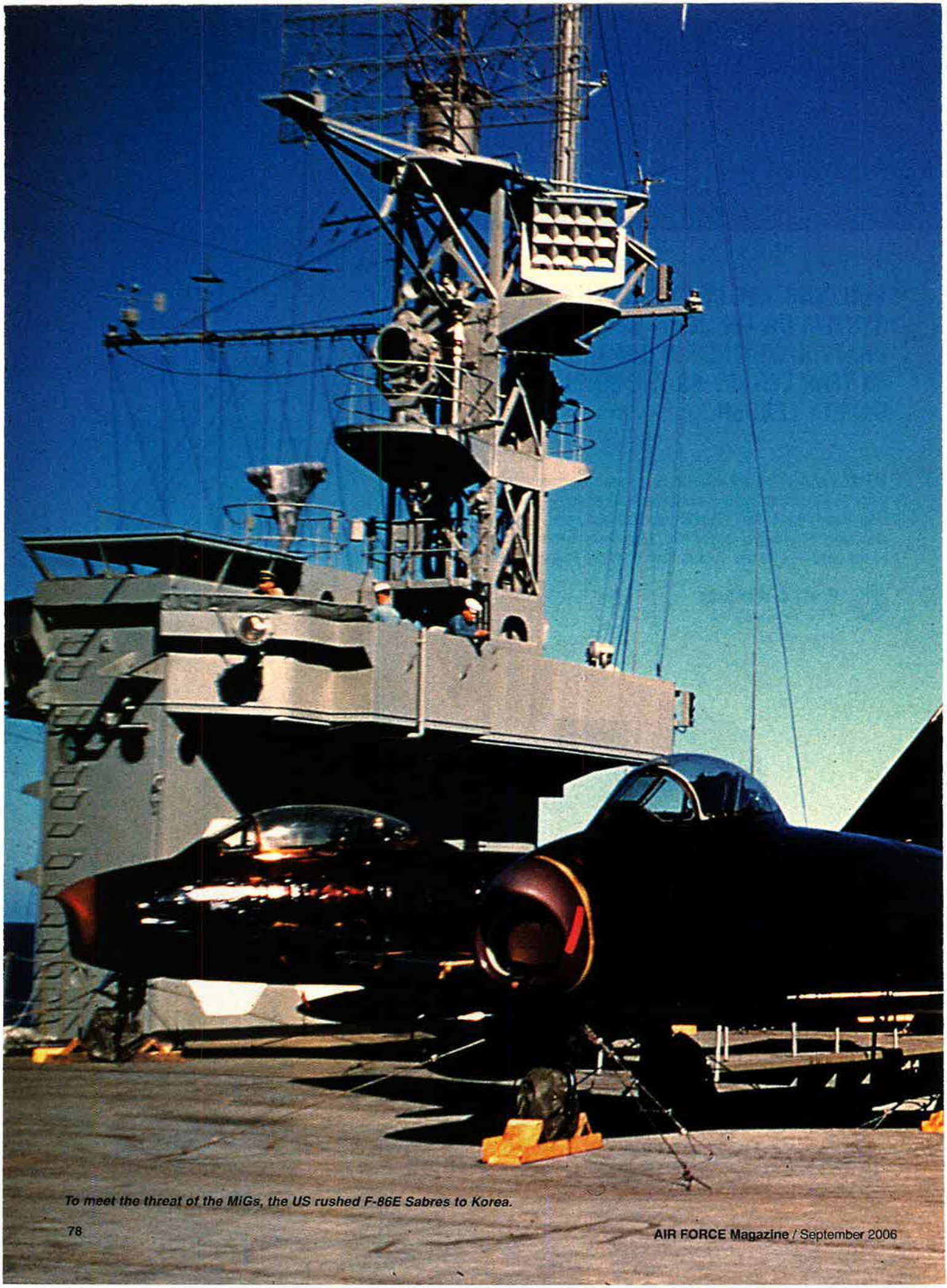

To meet the threat of the MiGs, the US rushed F-86E Sabres to Korea.

Sabres and Aces

These rare color images present some of the pilots and aircraft that made history in the Korean War.

Photo by Harry Schumate

In the early hours of June 25, 1950, North Korea struck across the 38th parallel into South Korea, plunging the United States into war. The entry of the Chinese and Soviet communist forces and weapons into the war created difficulties for American forces, particularly with the introduction of the swept-wing MiG-15.

In December 1950, the US, realizing the possibility of losing control of the skies, quickly rushed three squadrons of F-86 Sabres to the Far East.

At right, the 16th Fighter-Interceptor Squadron's A Flight departs MiG Alley—an area near the Yalu River in North Korea famed for air-to-air combat. The Sabres are returning to Suwon AB, South Korea, after a routine combat air patrol.

Photo by Phil Hunt

Photo by J.W. Manney

The Huff, *shown at left, was assigned to Lt. James L. Thompson of the 39th Fighter-Interceptor Squadron. Thompson shot down a MiG-15 that had a dragon painted on its side and, on returning to Suwon, had a similar image painted on his Sabre. Thompson is credited with two MiG kills.*

The F-86 Sabre was superior to the MiG-15 in its turns and dives, but the MiG had better acceleration and rate of climb and could reach higher altitudes.

Capt. James Jabara (center right, talking to newsmen) became the first jet ace in history on May 20, 1951, claiming his fifth and sixth kills on the same mission. All of his confirmed kills were against MiG-15s.

After completing two separate tours in Korea, Jabara finished as the second highest scoring ace in the war, with a total of 15 kills.

Photo by Ed Fletcher

Photo by Harold Chitwoods

Lt. Col. George I. Ruddell, at left, commanded the 39th FIS and was credited with eight kills in the Korean War. Below, a scoreboard placed outside an operations tent at Suwon itemizes the 334th Fighter-Interceptor Squadron's victories.

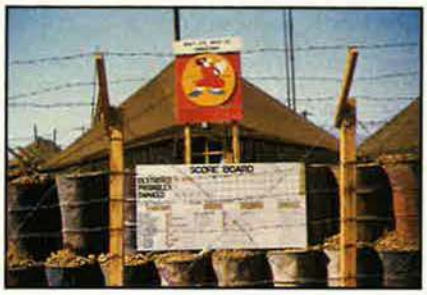

Photo by James Leatherbee

Photo by Doug Carter

Above, Capt. Manuel J. "Pete" Fernandez, with 14.5 confirmed victories, ranked third on the ace list. He flew with the 334th FIS, based at Kimpo AB, South Korea. At right, pilots from the 25th Fighter-Interceptor Squadron were often identified by their bright red scarves. Standing at far right is 1st Lt. Iven C. Kincheloe Jr., a Korean War ace with five confirmed kills.

Photo by Joe Cannon

Photo by T.R. White

F-86 units required a large number of external fuel tanks. Lack of such tanks could and did hamper effective combat air patrol in MiG Alley. Fuel economy was a problem for both sides.

At left, some of the aircraft and tanks at Suwon, home of the 51st Fighter Wing.

At right, an F-86 of the 51st Fighter-Interceptor Wing displays the wing's trademark checkered vertical stabilizer.

The 51st began the war flying the F-80, an airplane that had ruled supreme in the area up until that time. However, the MiG-15 proved to be superior.

In early 1951, Gen. Hoyt S. Vandenberg, Air Force Chief of Staff, ordered 75 new F-86Es sent to the Far East.

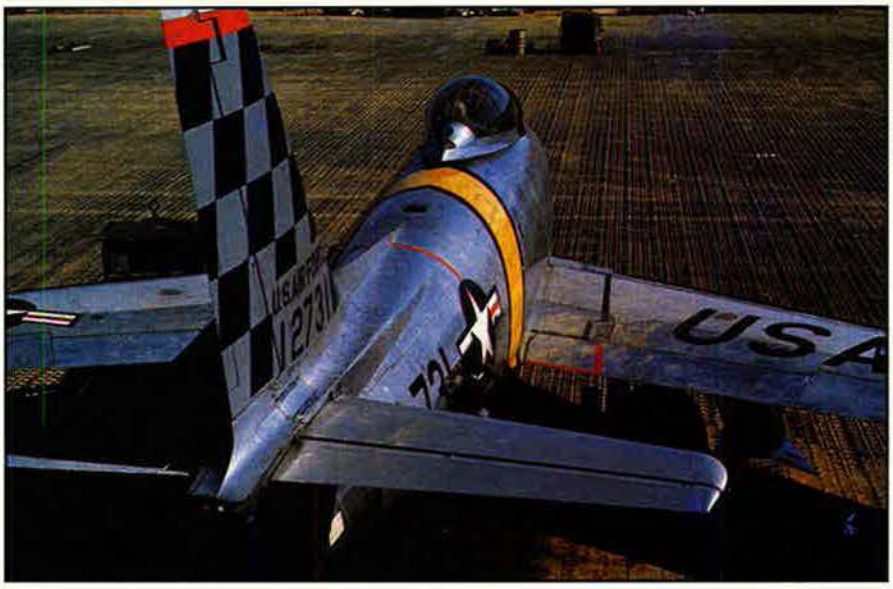

Photo by James Lindsay

Photo by Wayne Rose

Lt. Col. Clyde Wade holds up a freshly painted sign that reads "25,000th scrtie." The F-86 aircraft in the background were from the 39th FIS.

The 51st FW's pilots flew more than 45,000 sorties and shot down more than 300 MiG-15s. The wing produced 14 aces.

Photo by Archie Bulle

Unfortunately for its pilots, Sabre cockpits in winter months were jammed to capacity with clothing and survival gear (above). At right, an F-86 from the 336th FIS patrols Korean skies.

Photo by Houston Tuel

Photo by Karl Dittmer

Photo by Karl Dittmer

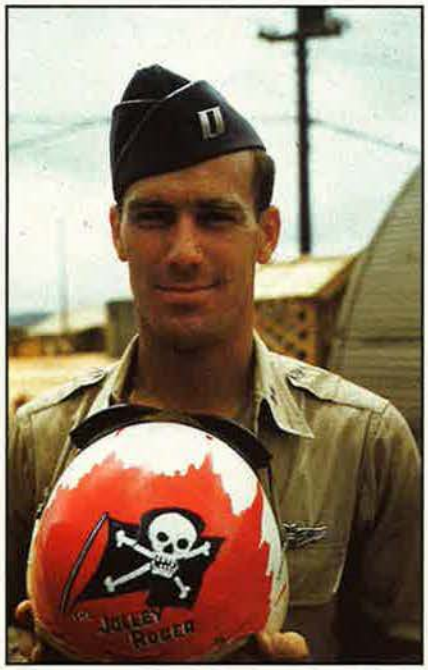

Photo by Philip Davis

Above, Capt. Troy Cope poses with Rosie, *one of the F-86s he flew with the 334th FIS. Cope was shot down over the Yalu River in 1952 and was missing in action until more than 50 years later, when his remains were recovered in China and returned to the US for burial in 2005.*

Top center, Capt. Clifford D. Jolley, an ace with seven victories, displays his helmet, hand-painted to match the name of his F-86. Top right, Lt. Philip Davis shows off the artwork on his 16th FIS Sabre.

Right, two F-86 Sabres head north to MiG Alley on a combat air patrol.

Photo by Karl Dittmer

Photo by Robert Cassatt

Photo by Paul Peterson

Above, F-86Fs are reconfigured for four 20 mm cannons, as part of the secret Project Gunval, created as a result of Sabre pilots' complaints that their machine guns did not pack enough punch. At Osan AB, South Korea, Lt. Robert Cassatt (left) stands by MiG Poison, *Maj. James P. Hagerstrom's Sabre.*

Col. Francis S. Gabreski, a World War II ace, commanded the 51st FW until June 1952, when he was succeeded by Col. John W. Mitchell. At right, Mitchell returns from a mission in his F-86, Mitch's Squitch.

Mitchell completed his tour in the Korean War with four MiG kills, but his fame stems from his World War II exploits. As commanding officer of the 339th Fighter Squadron at Guadalcanal, Mitchell led 18 P-38 Lightnings on the clandestine mission that killed Japan's Adm. Isoroku Yamamato. Mitchell was credited with 11 kills during World War II.

Photo by Earl Shutt

Photo by Al Shortt

Left, members of the 80th Fighter-Bomber Squadron, called the "Headhunters," are suited up and ready for another mission. Pictured (l-r) are: 2nd Lt. Vince Bakies, 2nd Lt. Bob Debenport, 2nd Lt. Al Shortt, 2nd Lt. Dick Wyatt, 2nd Lt. Ray Eason, and 1st Lt. Ken Dye.

Photo by James Carter

Above, the commander of the 8th Fighter-Bomber Wing personalized his Sabre by having the colors of all three squadrons painted on the vertical stabilizer. At right, Lt. Joel Perry of the 12th Fighter-Bomber Squadron checks out his yellow-nosed F-86 while a crew chief stands by.

Photo by Robert Hook

Photo by Fred Kummer

Photo by Leo Fournier

Photo by Bill Nowadnick

Photo by Cliff Nunnery

At right, in photo above, 1st Lt. Charles A. Gabriel (later, Air Force Chief of Staff) chats with fellow 16th FIS pilot Lt. Fred Kummer. Gabriel flew more than 100 combat missions in P-51s and F-86s during the war. Top center, Lt. Ralph D. Gibson, pictured on duty at Suwon, flew with the 335th FIS and was credited with five MiG kills.

Top right, this F-86 safely returned to Suwon after taking hits by a MiG's 37 mm cannon. Also at top right, the 67th Fighter-Bomber Squadron services an F-86 on the tarmac.

At right, Vice President Richard M. Nixon tours the cockpit of an F-86 with double ace Capt. Ralph S. Parr Jr.

Photo by Donald Showen

Photo by J.W. Manney

Capt. Joseph C. McConnell Jr. was the highest scoring ace during the Korean War. He shot down 16 MiG-15s in four months. His Sabre, Beauteous Butch II, *is shown at left. Altogether, the conflict over Korea saw 39 F-86 pilots achieve ace status.* ■

Photographers: Archie Buie, Joe Canon, Doug Carter, James Carter, Robert Cassatt, Harold Chitwoods, Philip Davis, Karl Dittmer, Ed Fletcher, Leo Fournier, Robert Hook, Phil Hunt, Fred Kummer, James Leatherbee, James Lindsay, Cliff Nunnery, Bill Nowadnick, J.W. Manney, Paul Peterson, Wayne Rose, Al Shortt, Donald Showen, Earl Shutt, Houston Tuel, T.R. White. All photos from the collection of Warren Thompson. Captions by Dina Elshinnawi, Air Force *Magazine Editorial Associate.*

The theft of data on 26 million veterans was bad enough, but the VA's bumbling response defied belief.

The Laptop Scandal

By Peter Grier

The trove of sensitive government information should not have been taken home in the first place. Once it had been stolen, however, the federal investigation bordered on the farcical.

Backstabbing, rear-covering, interoffice bickering, and a general lack of urgency throughout the Department of Veterans Affairs made the whole situation worse. Lots worse.

These are among the conclusions in an official report on the theft in May of personal data for more than 26 million US veterans and active duty and reserve military personnel. Word of the theft caused a nationwide uproar.

The names, dates of birth, Social Security numbers, and other pieces of personal identity data were missing for nearly two months, during which time it was feared that millions of former and current military members could fall victim to criminal identity theft, fraud, or other woes.

The report by George J. Opfer, the VA's inspector general, urged disciplinary action be taken against the persons who failed to take appropriate action and that the VA establish clearer policies for protecting information, among other things.

In general, the report is unsparing in its inside account of bureaucracy at its worst.

"At nearly every step, VA information security officials with responsibility for receiving, assessing, investigating, or notifying higher level officials of the data loss reacted with indifference and little sense of urgency or responsibility," concludes the report.

A "Fascination Project"

The VA's sorry laptop scandal begins with a VA employee's "fascination project"—meaning one in which the employee was personally interested.

The employee goes unnamed in the IG report, but he was, evidently, well regarded by peers and bosses. Managers described him as someone who put in long hours and produced meticulous work.

His job featured designing and programming VA information systems and databases, so this employee had easy access to the electronically stored records of tens of millions of veterans. The employee was also supposed to

"At nearly every step, VA information security officials ... reacted with indifference and little sense of urgency or responsibility."

figure out ways to improve VA data and data-handling methods—and to do all of this while working relatively independently.

Then, on May 3, burglars struck the Maryland home of this technology specialist. The employee's wife discovered the crime at about 3 p.m. and reported the break-in to the local police. The employee himself found out about the robbery when he returned from work that afternoon.

The key items taken in the robbery were a personal laptop computer and an external hard drive, which had been stored in different places in the house. When the employee found this out, he immediately notified his superiors and the VA Office of Security and Law Enforcement that the stolen equipment contained sensitive VA data.

Much of the data on the hard drive was for his personal "fascination project," the employee later told IG investigators. The National Survey of Veterans, a 2001 VA effort that collected a wide variety of social and health information on former members of the armed services, had been criticized by some experts as inaccurate, he said. So the employee had taken a chunk of this massive database home, to verify parts of the survey on his own time.

For instance, he was using an online reverse telephone directory to see if names, addresses, and phone numbers of thousands of vets in the NSV survey matched up to those in the VA database.

This sort of cross-checking took hours, and he really could not justify doing it at the office, the employee told investigators. "He was willing to invest his own time to see if he could make progress in identifying the veterans," says the IG report.

The stolen computer equipment also contained some information on a second project, in which the employee was using various government databases to identify veterans who might have been exposed to mustard gas.

The employee had been taking sensitive VA data home for years. He had never asked anyone in the bureaucracy for permission to do so, and no one knew he was doing it, reported the IG study.

AP photo by Lawrence Jackson

R. James Nicholson, Secretary of Veterans Affairs, on July 20 testified before a Congressional committee about the theft, saying there was little risk that the personal data contained on the hard drive had been compromised.

"Extremely Poor Judgment"

The IG report concludes that the employee not only lacked permission but he also had no need to take the data home and subsequently failed to properly safeguard it.

"The employee used extremely poor judgment when he decided to take personal information pertaining to millions of veterans out of the office and store it in his house without password protecting and encrypting the data," says the IG report.

The poor decision-making did not end there. VA security personnel, alerted to the theft, pursued the case with all the energy of a hound dog asleep in the sun of an August afternoon.

It was not until May 5—two days after the theft was discovered—that an information security officer interviewed the employee to determine what might have been lost. The term "interview" may be an overstatement, considering that their face-to-face meeting lasted about three minutes.

According to this security officer, the employee started going off in so many directions that the investigating officer just could not take good notes. So he told the employee to write down what had happened and send it to him.

The written account arrived that afternoon. It talked about database extracts that might have been stolen, but did not mention the number of files that were possibly compromised, or otherwise convey the magnitude of the incident.

Using this slight information as his source material, the security officer wrote up a "White Paper on Lost Data" that he e-mailed to the employee's superiors, Michael H. McLendon, deputy assistant secretary for policy, and Dennis Duffy, acting assistant secretary for policy, planning, and preparedness.

These men later told the inspector general's office that they were relying on the information security officer, a GS-13 civil servant, to make sure that law enforcement had all the information it needed to pursue the case.

The information security officer had a somewhat different view of his responsibilities. "I'm not an investigator," he later told the IG. "I'm a computer tech guy that has a job."

Roles and Missions?

The information security officer had a somewhat different view of his responsibilities. "I'm not an investigator," he later told the IG. "I'm a computer tech guy that has a job."

VA's response to the data theft was further slowed by Washington-style office infighting.

McLendon, the VA policy official, had actually learned about the incident on the day it occurred, when the employee, obviously upset, called McLendon with the police still at his house. Yet McLendon initially did not tell his boss, Duffy, what had happened.

McLendon was a political appointee and thought, for some reason, that he reported directly to the Secretary of Veterans Affairs, R. James Nicholson. He apparently did not believe that the "careerist" Duffy, a civil servant, should supervise him.

So, the judgment of the two men at the center of the VA's handling of the incident was affected by their long-standing and personal feud.

"McLendon characterized [the office] as one of the most dysfunctional organizations in VA and [said] that it was one of the most hostile work environments 'he ever set foot in,'" states the IG report.

Duffy did not learn of the incident until two days after it happened—and only then because of what he described as a "casual hallway meeting" with the information security officer working on the case.

Not that he moved with much urgency after he did hear about it. Duffy did not notify higher officials, such as the VA chief of staff, Thomas G. Bowman, about the scope of the problem, informing him that the missing components contained names and other personal identification.

Asked why he hadn't sounded an alarm, Duffy said that he knows how VA officials operate. "They do not do crisis management," he claimed.

In hindsight, Duffy told an interviewer from the IG office, he could see that his biggest mistake was that he "failed to recognize the magnitude of the whole thing."

A Systemic Lack of Urgency

In that failure, he was not alone. Over and over, the IG report uses the same phrase to describe the response to this incident, even for high-level officials: "lack of urgency."

Six days after the burglary, Duffy told Chief of Staff Bowman about the theft and possible loss of veterans' personal data. The next day, Duffy provided him with the cursory white paper.

Bowman's first action was to forward all the information he had to the general counsel's office. He wanted to know VA's legal responsibility to inform veterans of the theft. Then he waited—for six days.

Bowman got a phone call from Opfer, the IG, on May 16. The IG's office had determined the scope of the problem independently, by interviewing the employee. In this discussion with the IG, Bowman acknowledged that he knew about the data theft, but added that he was not really aware of how big it might be. He estimated that hundreds of thousands of records could be involved.

Hundreds of thousands? Opfer told Bowman that the names, dates of birth, Social Security numbers, and other pieces of personal identity data for as many as 26 million veterans might have been stolen.

The IG informed Bowman that the VA Secretary, Nicholson, needed to get a briefing on this issue. Shortly thereafter, Nicholson finally heard the bad news from his own staff, learning just how widespread and politically explosive the loss of data could be. By this point, almost two weeks had passed since the theft.

Highlighting the multilevel negligence is this fact: The IG office discovered the magnitude of the theft, when so many others had not, by simply asking the employee who had lost the data.

After the brief chat with the information security officer, the employee hadn't been contacted by anyone from the VA for more details on what had happened. The inspector general was able to determine the scope of possible loss in one interview with the man on May 15.

"It is unexplainable as to why the employee who reported the stolen data was never consulted by anyone in the management chain of command except the GS-13" security officer, concludes the IG report.

The VA theft represented one of the largest breaches of security of personal data in the nation's history. Fortunately, on June 28 law enforcement officials recovered the stolen laptop and external hard drive intact.

After examining the equipment in minute detail, both the FBI and the VA's inspector general concluded that they were "highly confident" that the data files were not compromised by whoever stole them.

McLendon resigned his VA post in June, according to news reports. Duffy has retired. The employee who took the data home in the first place was fired.

According to the IG report, the VA needs to change its policies no less than its people. Rules governing removal of protected information from the office, and for the storing of sensitive data on personal computer equipment, are a "patchwork" of regulations that do not provide adequate protection.

"More needs to be done to ensure protected information is adequately safeguarded," says the inspector general's report.

No kidding. ■

Peter Grier, a Washington editor for the Christian Science Monitor, *is a longtime defense correspondent and a contributing editor to* Air Force *Magazine. His most recent article, "Curtain Up on Space Modernization," appeared in the December 2005 issue.*

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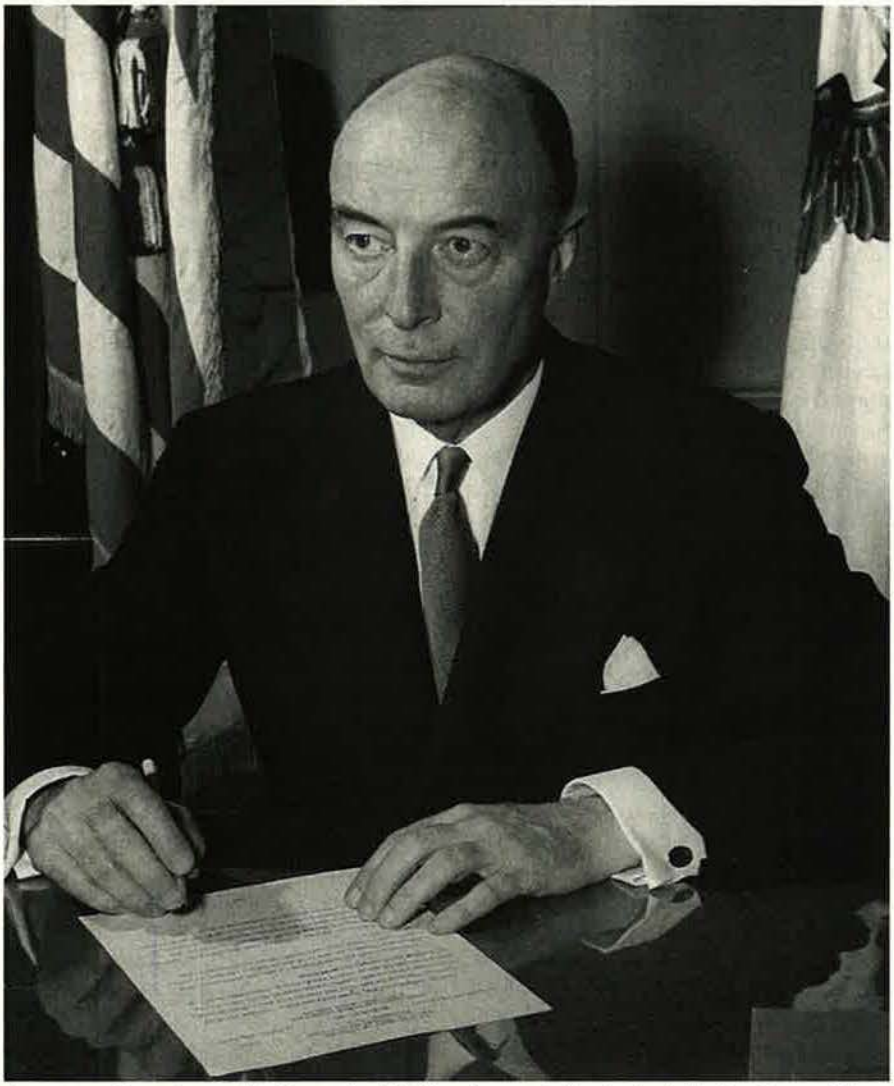
Long before Robert Lovett became Secretary of Defense, he helped Hap Arnold push for increased aircraft production, more pilots, and Air Force independence.

LOVETT

By Herman S. Wolk



Lovett, as Secretary of Defense, in 1951 is shown at his desk at the Pentagon. He was one of the earliest advocates of strategic bombing.

On Nov. 7, 1940, Maj. Gen. Henry H. "Hap" Arnold, Chief of the Army Air Corps, welcomed Robert A. Lovett into the War Department. Arnold would later say Lovett, who became assistant secretary of war for air, was of "towering importance to our Air Force." During World War II, Lovett became the indispensable point man for Arnold, greatly influenced aviation industrial policy, and aided the creation of the independent Air Force.

Lovett had been a Navy flier in World War I, receiving the Navy Cross. He had taken flight training with a group of Yale undergraduates. The unit was inducted into active service by Assistant Secretary of the Navy Franklin D. Roosevelt, and Lovett eventually flew bombing missions with a British unit based in France.

Subsequently, he commanded the Navy's northern bombing group. Lovett came out of the war persuaded of the potential offensive power of the independent bombing mission.

Private-sector work frequently took him to Europe, and by 1940 he became concerned about the rise of German airpower. As a result, in October 1940 he conducted a tour of aircraft manufacturers in California, concluding that the American aircraft industry was far too weak to meet the requirements of war.

On entering the War Department in late 1940, Lovett wrote a report to Assistant Secretary of War Robert P. Patterson, detailing his concern about the ability of aircraft manufacturers to gear up to a wartime environment. "This is a quantitative war," Lovett emphasized, but "the airplane industry has so far, been qualitative."

In late 1940, Arnold was struggling to build up the American air arm. Now with the War Department, Lovett determined that aircraft procurement was in "a hell of a mess" and began to straighten out procurement and production.

This would be just the beginning of his work on the air arm during World War II. Lovett would subsequently fix the processes for training pilots; play a major part in reorganizing the Army air arm; advocate a greater role for bomber aircraft in the nation's defense buildup; and take a leading role in the fight for an independent Air Force.

Through the force of his personality, Lovett was able to carry his recommendations to the highest levels of government—to President Roosevelt, Secretary of War Henry L. Stimson, and

the Army Chief of Staff, Gen. George C. Marshall.

Repairing Industrial Capacity

The US aircraft industry needed more effective procurement procedures, better standardization, and mass production. Arnold wanted to build an Air Force to meet the demands of war. Lovett knew how to do it. They took to one another from the start.

"I found in Bob Lovett," Arnold emphasized, "a man who possessed the qualities in which I was weakest, a partner and teammate of tremendous sympathy and of calm and hidden force." Arnold noted that when he became impatient, ranting about the War Department's inadequacies, Lovett "would know exactly how to handle" him and calm him down.

Roosevelt, alarmed at the resurgence of the Luftwaffe, had called in 1938-39 for a huge expansion of the Air Corps. With Hitler's blitzkrieg attack on Poland in September 1939, the issue of production for the Army's air arm turned critical. Stimson stated that airpower was deciding the fate of nations. "We are," he said, "in the midst of a great crisis. The time factor is our principal obstacle."

The President, determined at all costs to keep Britain in the war against Nazi Germany, insisted that a major portion of America's aircraft production be sent to Britain. He saw aircraft shipments to Allies as part of the lend-lease program. This presented Arnold with a big problem as he desperately tried to build an Air Force during a rapidly deteriorating situation in both Europe and the Far East. (See "When Arnold Bucked FDR," November 2001, p. 86.)

It wasn't that Arnold failed to understand Roosevelt's view, but he felt strongly that "obligations to my own country and my own Corps were definite." Between helping Allies, "and giving everything away, a realistic line must be drawn, or there would never be a United States Air Force except on paper," Arnold stressed.

In July 1940, the British had 8,275 aircraft on order in the United States, almost four times the number the US had on order.

"It was the rosy dream of some Americans that we could save the world and ourselves by sending all our weapons abroad for other men to fight with," said Arnold. "If this priority thus deprived our own airpower of even its foundation stones, certain people seemed to take the view that it was just too bad."

Things got so tense between Arnold and FDR that in early 1941 the air chief thought he might be relieved. However, Lovett persuaded Arnold to visit Britain to assess the situation firsthand. As a result, Arnold spent two weeks in England and was accorded an especially warm welcome by all levels of officialdom, including Prime Minister Winston S. Churchill and King George. Upon his return in early May, Arnold briefed Roosevelt and his Cabinet, and Arnold was out of the doghouse.

Lovett, meanwhile, realized that he had to build a reporting system that he and Arnold could rely on. They required accurate data on aircraft production, scheduling, spare parts, and numbers of pilots and ground crews. Arnold informed his staff that Lovett had "lost faith in our figures."

Lovett proceeded to gather reliable information and structure his own reporting system. Although foreign aircraft orders contributed to building domestic aircraft production capacity, Lovett realized that the shortage of airplanes affected the output of pilots trained in the United States. This was a "grave situation," and to Lovett the major problem remained aircraft deliveries to the British and other Allies.

Ramping Up Pilot Training

The US also needed more pilots for the aircraft it did have available. Believing that pilot and crew training needed to be immediately accelerated, Lovett in 1941 received approval from Arnold and Marshall to increase the pilot training program from 7,000 to 30,000 airmen annually.

"It takes many months," he emphasized to Stimson, "adequately to prepare pilots and crews for modern aircraft." Lovett was a proponent of going to college campuses to persuade graduates to undertake pilot training in the air arm.

Shortly after the Japanese attack on Pearl Harbor, Lovett had to fend off Roosevelt and Arnold, who in his judgment were demanding unrealistic production figures. Roosevelt had called for greatly increased bomber production, determined to hit the enemy with long-range bomber aircraft. In the State of the Union address of 1943, Roosevelt said, "We will hit them from the air heavily and relentlessly," and "the Nazis and the Fascists have asked for it, and they are going to get it."

Roosevelt indicated to Stimson that he wanted 60,000 aircraft produced in 1942 and 125,000 in 1943. Lovett felt that this level of production was simply not possible.

Lovett was appalled at what he considered FDR's casual production targets. "It is a little bit like asking a hen to lay an ostrich egg," Lovett told Arnold. "It is unlikely that you will get the egg and the hen will never look the same." Arnold did not flinch, replying that "if we can induce her to lay it, I, for one, feel that we must accept the wear and tear on the hen."

This was pure Arnold, exhorting all—especially the aircraft manufacturers—to redouble their efforts. Like Roosevelt, he hated self-imposed obstacles. He reminded Lovett that "the negative assumption that requirements cannot be met, supported by facts as they are and not as we are capable of making them, too often has characterized thinking on this subject."

Lovett however, did not back down: "I do not feel that I can have any part in supporting a program which, in my opinion, is likely to cause false hopes initially and bitter disappointment later. Therefore, I feel compelled to disassociate myself." Reluctantly, Arnold later retreated and approved a production figure of 82,000 aircraft (vice 125,000) for 1943, which in retrospect proved to be wholly realistic for the "arsenal of democracy."

Lovett remained a leading proponent of the long-range bomber during all of this. Arguing that the war made the case for offensive weapons, he pressed his case to Stimson, Marshall, and Roosevelt through FDR's aide, Harry Hopkins.

"At irregular intervals in history," Lovett pointed out, "some new development has altered the art of war and changed the fate of peoples and the world." The evolution of the long-range bomber, he emphasized to Stimson, amounted to a "watershed" in the history of warfare.

With the immense difficulties in procurement, production, and pilot training, Lovett nonetheless never lost sight of the goal of air autonomy. He and Arnold saw the direct connection between accelerating these major areas of responsibility and the need to reorganize. When Lovett first joined the War Department, the Army air arm was split between the Air Corps—responsible for training, procurement, and personnel—and General Headquarters Air

Gen. H.H. "Hap" Arnold, Chief of the Army Air Forces during World War II (shown here in a 1944 photo), professed great admiration for Lovett.

Force, which maintained tactical units. The arrangement "resembled nothing in the world," Lovett stated, "so much as a bowl of spaghetti."

Pushing for Autonomy

This lack of unity in the air arm was partially solved by the June 1941 War Department reorganization that created the Army Air Forces. The reorganization provided Arnold with an Air Staff to formulate plans and policy and gave him responsibility to coordinate all air matters.

Lovett played a major role in the 1941 reorganization, holding discussions with Arnold and Brig. Gen. Carl A. "Tooey" Spaatz. Lovett presented the case for AAF establishment to Stimson. The major question at this time, according to Stimson, was to determine how far to go with air autonomy while still keeping the air arm as part of the Army.

Arnold, Spaatz, and Lovett continued to push for autonomy. (See "The Founding of the Force," September 1996, p. 62.) With the support of Stimson and Marshall, the reorganization of March 1942 gave the AAF equality with the Army Ground Forces and Service Forces.

This so-called "Marshall Reorganization" has been termed the most radical Army reorganization since creation of the General Staff in 1903. In Marshall's view, the War Department had become a giant bureaucracy, consumed in red tape, unable to get anything done. According to Lovett, in the General Staff "there was so much deadwood, the place was a positive fire hazard."

Lovett pointed out that the War Department staff not only had failed to push through air requirements, but maintained an antipathy to airmen. Consequently, crucial decisions were reached by the ground officers on the staff without regard to important air requirements. Marshall, realizing that the Army air arm would play a major role in the global war, determined quickly to fix this problem.

Thus, with the 1942 reorganization, Arnold and Lovett were pleased, not only with equality with the ground and service elements, but with the fact that Army Chief of Staff Marshall clearly recognized that wartime requirements demanded air autonomy. "I do not think," Marshall emphasized, "that the public generally appreciated the vastness of the undertaking which has been imposed upon the Air Corps in both personnel and materiel."

At the same time, Stimson had been under increasing pressure from Congress to give the Army air arm complete independence. With implementation of the 1942 reorganization, Lovett promised the Secretary of War that he would do his best to tamp down the Congressional pressure. Lovett agreed with Arnold that, "while an independent Air Force may be a desirable ultimate aim," the time was not right for independence during a global conflict.

With the AAF heavily involved in Europe and the Pacific, the immediate goal, according to Lovett, was to bring the air forces up to wartime efficiency.

All the major players agreed that air independence should be put off. The War Department, Lovett pointed out, is drawing plans "to substitute reasonable autonomy for independence." Lovett also made the point that Marshall was in the midst of planning to give airmen

Lovett in 1947 takes the oath of office to become undersecretary of state. The oath was administered by Stanley Woodward, chief of protocol (right).

In this 1951 photo, Lovett (right), as deputy undersecretary of defense, greets Secretary of Defense George Marshall on Marshall's return from a trip to Japan and Korea. Lovett had worked for Marshall at the Department of State and had followed him to DOD.

autonomy within the War Department structure. The Air Corps, of course, supported this thrust, in a period when it was building up toward what Lovett termed "wartime efficiency." The air forces, he said, "must first learn to walk before they run."

An Independent Air Force?

The question of postwar military reorganization persisted. Congressional committees convened during the war, and the War Department and the AAF remained concerned about the Navy's land-based air operations, which triggered controversy over the antisubmarine mission. After discussions with Stimson and Lovett, in late 1943 Marshall asked the Joint Chiefs to agree in principle to postwar formation of a single Department of Defense.

This put the Navy in a difficult position. Adm. Ernest J. King, Chief of Naval Operations, and Adm. William D. Leahy, chief of staff to Roosevelt, suggested additional study. As a result, a JCS Special Committee for Reorganization of National Defense was formed in 1944 and issued a report in April 1945 calling for a single department of national defense and an independent Air Force.

The lone dissenter on this committee was its chairman, Adm. James O. Richardson, who was opposed to a separate Air Force and argued for a continuation of the wartime system of coordination through JCS committees, the official Navy view.

Before the committee, Lovett made the case for an independent Air Force and unified command. Resources, he emphasized, should be allocated with vision on what the nation needs for its national defense "and not on the tortured interpretation of antiquated documents dealing with vague theories and doctrines which have to be thrown away the moment war breaks out."

Thus, Lovett continued to press the case for a single department and an Air Force coequal with the Army and Navy. Lovett was obviously the Chief's spear-carrier on this issue. "Feeling as strongly as I do," he made clear to Spaatz, "I expect to be in more or less continuous hot water from now on as I am going to battle for a unified Air Force."

Appearing before a Congressional committee in the spring of 1944, Lovett emphasized the economic advantages of unification. The nation would benefit from having an organization "as modern as the instruments we use." Neither Lovett nor Arnold were satisfied with the War Department's postwar planning on air matters. At Lovett's urging, Arnold created two postwar planning offices in AAF Headquarters which subsequently formulated the 70-group objective for the postwar Air Force.

When Arnold in 1944 had difficulty appointing a committee to study the effects of strategic bombing in Europe, he asked Lovett to put it together. Informing the AAF Chief that Roosevelt should appoint the committee members, Lovett thus took charge of organizing the US Strategic Bombing Survey.

Lovett recruited Franklin D'Olier, president of Prudential Insurance, to head the bombing survey. In June 1945, the survey's preliminary findings were given to Marshall, Arnold, and Lovett, thus influencing culmination of the B-29 campaign against Japan. Completed in early 1945, the survey—on Lovett's recommendation—made a strong case for postwar airpower and unification.

Lovett had long put forward the argument for the strategy of bombardment and blockade against Japan, which he thought would "nail them down until they sued for peace." He never thought that an invasion would be required to bring Japan down, and was ultimately proved correct.

Enduring Influence

After the war, Lovett was appointed undersecretary of state in 1947, by Secretary of State George C. Marshall. After Marshall moved to the Defense Department, Lovett later followed him to DOD as well. Lovett was named Secretary of Defense in 1951, during the Korean War, and held the position until Jan. 20, 1953.

Historian George Watson noted that the wartime relationship between Lovett and Arnold set the pattern for civilian-military interaction in the Army Air Forces and the War Department. Lovett was just the man to tamp down Arnold's rough edges.

Lovett was recognized as a man of great talent and integrity who could navigate with assurance at the highest levels of government. One of the earliest advocates of strategic bombing, Lovett was the official most responsible for solving the Army Air Forces' immense aircraft production problems during World War II. It was a crucial, daunting task that took well over two years to accomplish. Together with his work organizing pilot training and fighting for air autonomy, Lovett was a major contributor in building the small prewar Air Corps into the world's mightiest Air Force. That rapid evolution is unmatched in American military history. ■

Herman S. Wolk recently retired as senior historian, US Air Force History Support Office. He is the author of The Struggle for Air Force Independence, 1943–1947 *(1997) and* Fulcrum of Airpower *(2003). His most recent article for* Air Force *Magazine, "Ike and the Air Force," appeared in the April issue.*

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SSgt. Timothy A. Bishop. Joint Terminal Attack Controller, 607th Air Support Operations Group (Pacific Air Forces), Osan AB, South Korea—Deployed to Afghanistan, planned and controlled 120 close air support missions. ... Trained US Army Special Forces teams on CAS tactics. ... Awarded Bronze Star with valor device and US Army's Combat Action Badge for CAS support to two SF teams. ... Controlled AC-130s and A-10s during recovery of friendly forces and equipment at a crash site. ... Created seven training programs. ... Prepared JTAC teams for deployment to Southwest Asia.

SrA. Polly-Jan Bobseine. Fire Team Member, 823rd Security Forces Squadron (Air Combat Command), Moody AFB, Ga.—Deployed to Iraq. ... Took part in 45 ground missions against insurgents near Balad Air Base. ... Received combat patch from Army's 1st Infantry Division for outstanding work at Balad. ... Provided security for January 2005 Iraqi interim government elections. ... Found an improvised explosive device at Iraqi polling center, called in explosive ordnance disposal team, safely evacuated civilians. ... Conducted more than 100 combat patrols around Kirkuk Air Base environs. ... Completed rigorous US Army Combat Lifesaver Course. ... Graduated from Army airborne school and maintained jump status.

SSgt. Daniel F. Dierickx. Air Traffic Control Journeyman, 270th Air Traffic Control Squadron (Air National Guard), Klamath Falls, Ore.—Volunteered for second and third tours in Iraq. ... Controlled aircraft just three days after arriving in Iraq. ... Trained 15 newly arrived controllers. ... Averted a potential collision by assuming command and control from Iraqi controllers when a C-17 was put on the same runway as a C-130 on short final approach. ... Rerouted more than 160 flight operations when an F/A-18 was disabled on the runway. ... Worked through language barriers and differing rules to create a joint US-Iraqi control team.

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By Tamar A. Mehuron, Associate Editor

The Air Force Outstanding Airman program annually recognizes 12 enlisted members for superior leadership, job performance, community involvement, and personal achievements.

The program was initiated at the Air Force Association's 10th annual National Convention, held in New Orleans in 1956. The selection board comprises the Chief Master Sergeant of the Air Force and the command chief master sergeants from each USAF major command. The selections are reviewed by the Air Force Chief of Staff.

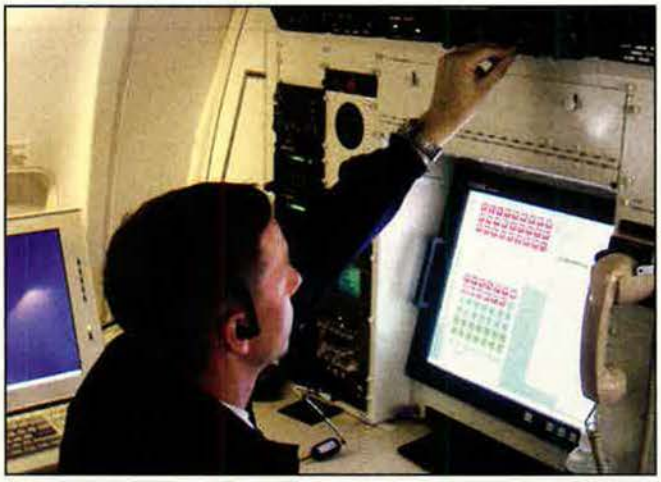
The 12 selectees are awarded the Outstanding Airman ribbon with the bronze service star device and wear the Outstanding Airman badge for one year.

SSgt. Jeffrey M. Hansen. Explosive Ordnance Disposal Craftsman, 49th Civil Engineer Squadron (ACC), Holloman AFB, N.M.—Awarded Army's 184th Ordnance Battalion combat patch. ... Identified insurgent ammunition cache, resulting in the seizure of 47 rockets. ... Supervised 29 post-blast investigations, collecting intelligence that led to arrest of bomb makers. ... Trained special operations troops in complex demolition techniques. ... Provided classified F-117A munitions support. ... Wrote a comprehensive guide on mobility equipment maintenance. ... Led munitions clearance efforts of two training ranges with zero mishaps.

SMSgt. Michael T. Lemke. Contracting Superintendent, 90th Contracting Squadron (Air Force Space Command), F.E. Warren AFB, Wyo.—Wrote a contingency training plan that earned "Best Practice" from inspector general. ... Standardized AFSPC training in contract procedures. ... Set up secure satellite phone service in Iraq. ... Facilitated integrated cell-landline-satellite phone service in Baghdad. ... Expedited armored car purchase as a security measure for Mosul government leadership. ... Earned Joint Commendation Medal. ... Received John L. Levitow Award at Senior Noncommissioned Officer Academy.

SMSgt. Henry Parker III. Squadron Superintendent, 65th Services Squadron (US Air Forces in Europe), Lajes Field, Portugal—USAFE Senior Noncommissioned Officer of the Year. ... Led both squadron combat support and resource management flights in the area of responsibility. ... Co-wrote management plan for Al Udeid (Qatar) Coalition City. ... Engineered education facility project. ... Overhauled the service squadron's readiness program. ... Helped lead renovations of dining room and fitness center. ... Received SNCO Commander's Award.

SrA. Eric J. Pena. Combat Arms Instructor, 349th Security Forces Squadron (Air Force Reserve Command), Travis AFB, Calif.—Served as turret gunner for convoys within greater Baghdad. ... Ensured security for US military legal personnel in Central Criminal Court of Iraq. ... Responsible for moving insurgents in custody of coalition forces. ... Worked closely with Iraqi security forces. ... Installed laser sights for M-9 pistols for Raven unmanned air vehicle security teams. ... Led wing inspections of thousands of M-16A2 rifles needed for troops in the theater. ... Received Joint Service Commendation Medal.



SSgt. David L. Plachno. Communications Systems Operator, Presidential Airlift Squadron (Air Mobility Command), Andrews AFB, Md.—AMC's Airman of the Year for 2005. ... Provided communications support for more than 30 Presidential flights. ... Certified on the VC-25 in record time. ... Qualified quickly on C-32 and C-40. ... Troubleshot a problem affecting secure radio, restoring secure communications link between President and White House staff. ... Managed tsunami relief mission to Asia for former President Clinton and former President Bush. ... John L. Levitow Award recipient.

TSgt. Bradley T. Reilly. Combat Control Craftsman, 23rd Special Tactics Squadron (Air Force Special Operations Command), Hurlburt Field, Fla.—Deployed to Afghanistan. ... Wounded in OEF, received Purple Heart and Silver Star. ... Administered life-saving emergency medical care to wounded soldier under hostile fire. ... Coordinated close air support for dozens of combat patrols. ... Devised procedures to use US Navy attack submarines as a special tactics platform. ... Set up landing zone at forward operating base. ... Controlled many combat sorties and brought in supplies critical to Army Special Forces. ... Developed new tactics for border security checkpoints inside enemy territory. ... Qualified as Raven unmanned aerial vehicle operator.

SrA. (now SSgt.) Elizabeth E. Sewell. Personnel Employment Journeyman, 71st Flying Training Wing (Air Education and Training Command), Vance AFB, Okla.—Filled noncommissioned officer position for six months during period of need. ... Sustained zero discrepancies as NCO. ... Corrected awards and decorations errors. ... Revamped and published wing awards and decorations guide. ... Earned an "outstanding" report in readiness exercise. ... Retooled officer accession process, slashing procedure time. ... Executed deployment exercises, processing hundreds of personnel records with no errors.

TSgt. Billy Tramel Jr. Noncommissioned Officer in Charge, Fire Suppression Section, 75th Civil Engineer Squadron (Air Force Materiel Command), Hill AFB, Utah—Chosen as AFMC NCO of 2005. ... Deployed to Iraq in support of Army combat operations. ... Served as chief Air Force advisor for security of infrastructure of Iraqi oil production. ... Helped manage a multimillion dollar oil pipeline security project for Iraqi Army. ... Contributed to security system for Iraq's largest oil facility. ... Organized and led more than 20 convoys per month. ... Led combat live fire training at Udairi Range in Kuwait. ... Discovered IED on primary Iraqi road and led response effort.

MSgt. Renee L. Williams. Command Equipment Manager, Hq., AFRC (Air Force Reserve Command), Robins AFB, Ga.—Honored as Hq. AFRC's Senior Noncommissioned Officer for second consecutive year. ... Volunteered for duty in Combined Air Operations Center at Al Udeid AB, Qatar. ... Located and acquired hard-to-find B-52 gyroscopes, enabling bombers to quickly return to mission capable status. ... Invented a superior repair-and-return process for Identification, Friend or Foe (IFF) transponders. ... Expedited purchase of runway repair material for Bagram AB, Afghanistan. ... Reallocated excess weapons from closing units to fix shortfalls throughout AFRC.

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Ft. Belvoir, Va.

Maj. Gen. John T. Sheridan
Deputy Director, NRO

Brig. Gen. Chris T. Anzalone
Deputy, Test & Assessment, MDA

Brig. Gen. Floyd L. Carpenter
Deputy Director, Military Support, NRO, and Director, Defense Space Reconnaissance Program

Brig. Gen. Charles R. Davis
Director, Joint Strike Fighter, USD, Acquisition, Technology, & Logistics

Brig. Gen. Robert E. Dehnert Jr.
Deputy, Force Structure Integration & Deployment, MDA

Brig. Gen. Randal D. Fullhart
Deputy Chief, Central Security Service
Ft. Meade, Md.

Brig. Gen. Larry D. James
Director, Signals Intelligence Systems Acquisition & Operations Directorate, NRO

Brig. Gen. Michael F. Planert
Military Executive and Director, Military Support & Operations, National Geospatial-Intelligence Agency
Bethesda, Md.

Brig. Gen. David B. Warner
Director, C2 Programs, DISA

Joint Chiefs of Staff

Gen. T. Michael Moseley
Chief of Staff, United States Air Force

Lt. Gen. William M. Fraser III
Asst. to Chairman

Lt. Gen. Victor E. Renuart Jr.
Director, Strategic Plans & Policy

Maj. Gen. Scott S. Custer
Vice Director

Maj. Gen. Thomas A. Dyches
Asst. to Chairman, JCS, Reserve Matters

Maj. Gen. Joseph E. Kelley
Joint Staff Surgeon

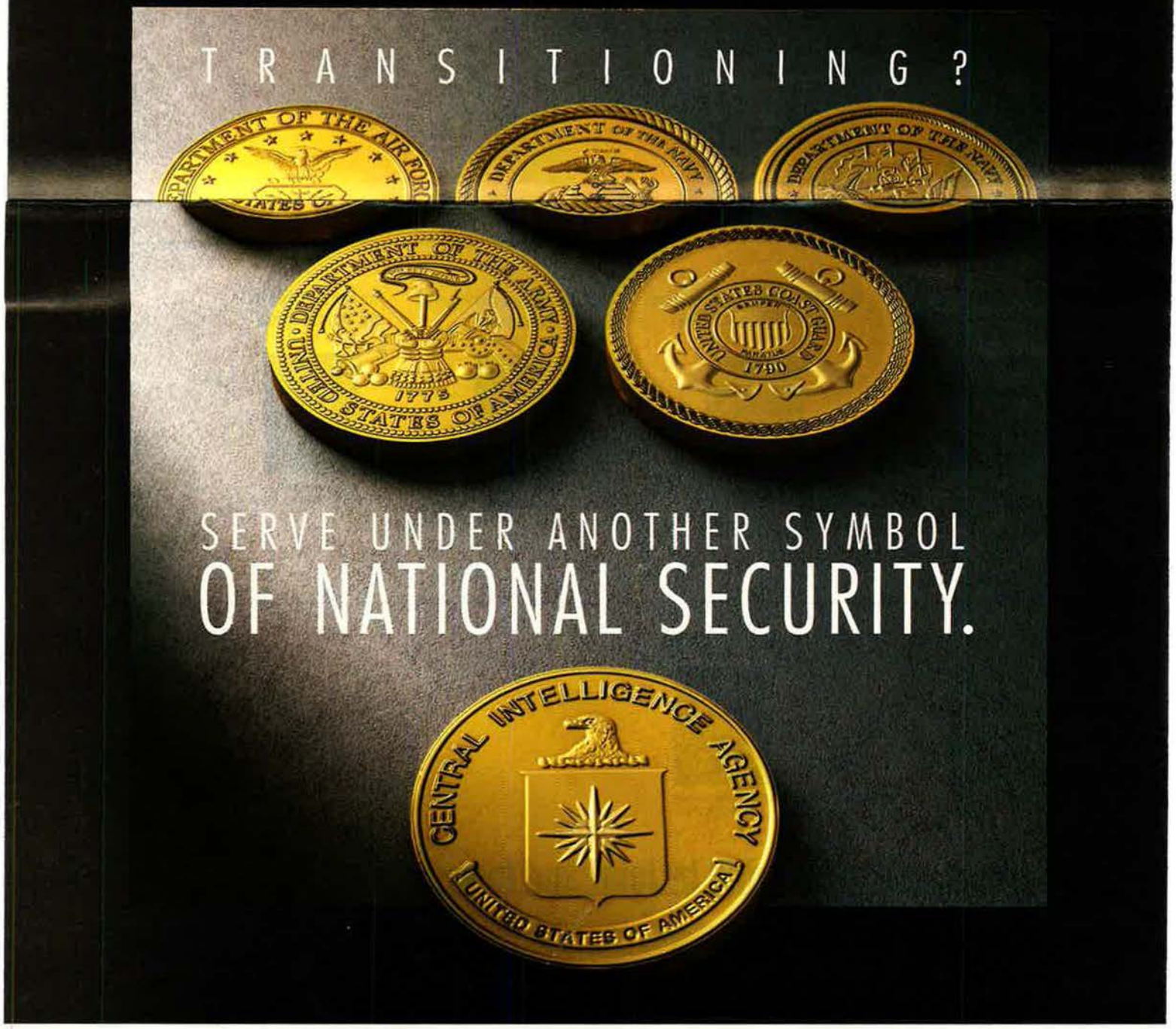
Brig. Gen. Floyd L. Carpenter
Deputy Director, National Systems Operations

Brig. Gen. Paul A. Dettmer
Vice Director, Intelligence

Brig. Gen. David K. Edmonds
Deputy Director, Operations, Team 2, National Military Command Center

Brig. Gen. Maurice H. Forsyth
Deputy Director, Global Operations

CENTRAL INTELLIGENCE AGENCY



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Deputy Director, Force Application

Brig. Gen. O.G. Mannon
Deputy Director, Special Operations

Brig. Gen. Bobby J. Wilkes
Deputy Director, Politico-Military Affairs (Asia)

Brig. Gen. Daniel P. Woodward
Deputy Director, Force Management

Joint Service Schools

Maj. Gen. Teresa Marne Peterson
Commandant, National War College
Ft. Lesley J. McNair, D.C.

US Central Command

Lt. Gen. Gary L. North
Commander, US Central Command Air Forces
Shaw AFB, S.C.

Maj. Gen. Kurt A. Cichowski
Deputy Chief of Staff, Strategy, Plans, & Assessment, Multinational Force-Iraq
Baghdad, Iraq

Maj. Gen. Vern M. Findley II
Director, Plans & Policy
MacDill AFB, Fla.

Maj. Gen. William L. Holland
Deputy Combined Forces Air Component Commander
Al Udeid AB, Qatar

Maj. Gen. Darryl A. Scott
Commander, Joint Contracting Command, MNF-Iraq
Baghdad, Iraq

Maj. Gen. Larry L. Twitchell
Chief, US Military Training Mission
Riyadh, Saudi Arabia

Maj. Gen. Thomas B. Wright
Deputy Chief of Staff, Strategic Communications, MNF-Iraq
Baghdad, Iraq

Brig. Gen. William A. Chambers
Deputy Commander, Combined Forces Command-Afghanistan
Kabul, Afghanistan

Brig. Gen. Gary S. Connor
DCS, Communications & Information Systems, MNF-Iraq
Baghdad, Iraq

Brig. Gen. Jack B. Egginton
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MacDill AFB, Fla.

Brig. Gen. Blair E. Hansen
Deputy Commander, USCENTCOM Air Forces
Shaw AFB, S.C.

Brig. Gen. Robert H. Holmes
Deputy Director, Operations-Force Protection
MacDill AFB, Fla.

Brig. Gen. Mark S. Solo
Chief, Office of Military Cooperation
Kuwait

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Commander, Air Component Command
Ramstein AB, Germany

Maj. Gen. Robertus C.N. Remkes
Director, Plans & Policy
Stuttgart-Vaihingen, Germany

Maj. Gen. Peter U. Sutton
Chief, Office of Defense Cooperation Turkey
Ankara, Turkey

Brig. Gen. Daniel R. Eagle
US Defense Attache, Russia
Moscow

Brig. Gen. Thomas J. Verbeck
Director, C3 Systems & Warfighting Integration
Stuttgart-Vaihingen, Germany

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Langley AFB, Va.

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Norfolk Va.

Maj. Gen. Gilmary Michael Hostage III
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Norfolk, Va.

Maj. Gen. Charles N. Simpson
Director, Requirements & Integration
Norfolk, Va.

US Northern Command

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Air Component Commander
Langley AFB, Va.

Maj. Gen. Paul J. Sullivan
Chief of Staff
Peterson AFB, Colo.

Maj. Gen. Mark A. Volcheff
Director, Policy & Planning
Peterson AFB, Colo.

Brig. Gen. Rosanne Bailey
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Cheyenne Mountain AFS, Colo.

Brig. Gen. Mark W. Graper
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Peterson AFB, Colo.

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Air Component Commander
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Lt. Gen. Douglas M. Fraser
Commander, Alaskan Command
Elmendorf AFB, Alaska

Lt. Gen. Daniel P. Leaf
Deputy Commander
Camp H.M. Smith, Hawaii

Lt. Gen. Bruce A. Wright
Commander, US Forces Japan
Yokota AB, Japan

Maj. Gen. Dana T. Atkins
Director, Operations
Camp H.M. Smith, Hawaii

Brig. Gen. Ralph J. Jodice II
US Defense Attache, China
Beijing

Brig. Gen. Frank J. Kisner
Deputy Director, Strategic Planning & Policy
Camp H.M. Smith, Hawaii

US Southern Command

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Davis-Monthan AFB, Ariz.

Maj. Gen. Glenn F. Spears
Deputy Commander
Miami

Brig. Gen. Thomas K. Andersen
Vice Commander, Air Forces Southern
Davis-Monthan AFB, Ariz.

Brig. Gen. Ricardo Aponte
Director, Standing Joint Force Headquarters
Miami

Brig. Gen. Mark E. Stearns
Director, Strategy, Policy, & Plans
Miami

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Director, Special Operations Center for Networks & Communications
MacDill AFB, Fla.

Brig. Gen. Eric E. Fiel
Deputy Commanding General, Joint Special Operations Command
Ft. Bragg, N.C.

Brig. Gen. Alfred K. Flowers
Director, Center for Force Structure, Resources, & Strategic Assessments
MacDill AFB, Fla.

US Strategic Command

Lt. Gen. Charles E. Croom Jr.
Deputy Commander, Global Network Operations
Arlington, Va.

Lt. Gen. Robert J. Elder Jr.
Joint Functional Component Commander, Space & Global Strike
Barksdale AFB, La.

Lt. Gen. C. Robert Kehler
Deputy Commander
Offutt AFB, Neb.

Maj. Gen. Thomas F. Deppe
Commander, Task Force 214
F.E. Warren AFB, Wyo.

Maj. Gen. John C. Koziol
Commander, Joint Information Operations Center
Lackland AFB, Tex.

Maj. Gen. Roosevelt Mercer Jr.
Director, Plans & Policy
Offutt AFB, Neb.

Maj. Gen. William L. Shelton
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Vandenberg AFB, Calif.

Maj. Gen. Mark A. Welsh III
Deputy Commander, Joint Functional Component Command for ISR
Bolling AFB, D.C.

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Gen. Norton A. Schwartz
Commander
Scott AFB, Ill.

Brig. Gen. Michael J. Basla
Director, C4 Systems
Scott AFB, Ill.

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Lt. Gen. Douglas M. Fraser
Commander, Alaskan NORAD Region
Elmendorf AFB, Alaska

Maj. Gen. William F. Hodgkins
Director, Plans
Peterson AFB, Colo.

Maj. Gen. M. Scott Mayes
Commander, CONUS NORAD Region
Tyndall AFB, Fla.

Brig. Gen. Donald J. Quenneville
Deputy Commander, Canadian NORAD Region
Winnipeg, Manitoba, Canada

North Atlantic Treaty Organization

Gen. William T. Hobbins
Commander, Allied Air Component Command Ramstein
Ramstein AB, Germany

Gen. Lance L. Smith
Supreme Allied Commander for Transformation
Norfolk, Va.

Lt. Gen. Thomas L. Baptiste
Deputy Chairman, NATO Military Committee
Brussels, Belgium

Lt. Gen. Maurice L. McFann Jr.
Commander, Allied Air Component Command Headquarters Izmir
Izmir, Turkey

Lt. Gen. James N. Soligan
Deputy Chief of Staff for Transformation
Norfolk, Va.

Maj. Gen. Joseph P. Stein
DCS, Operations, SHAPE
Casteau, Belgium

Brig. Gen. Jimmie C. Jackson Jr.
Deputy Commander, Combined Air Operations Center 7
Larissa, Greece

Brig. Gen. Stephen P. Mueller
Chief of Staff, Joint Warfare Center
Stavanger, Norway

Brig. Gen. Joseph F. Mudd Jr.
Deputy Commander, CAOC 6
Eskisehir, Turkey

Brig. Gen. Stephen D. Schmidt
Commander, E-3A Component
Geilenkirchen, Germany

United Nations Command

Lt. Gen. Garry R. Trexler
Deputy Commander, UN Command and US Forces Korea; and Commander, Air Component Command, ROK/US Combined Forces Command
Osan AB, South Korea

Maj. Gen. Stephen T. Sargeant
Deputy Chief of Staff, UN Command and US Forces Korea
Yongsan Army Garrison, South Korea

Brig. Gen. Marke F. Gibson
Chief of Staff, Air Component Command, ROK/US Combined Forces Command; and Vice Commander, US Air Forces Korea
Osan AB, South Korea

Other

Gen. Michael V. Hayden
Director, Central Intelligence Agency
Langley, Va.

Maj. Gen. John T. Brennan
Associate Director of Central Intelligence for Military Support, CIA

Maj. Gen. Paul W. Essex
Commander, Army & Air Force Exchange Service

Brig. Gen. Albert F. Riggle
Military Representative to the Senior Interagency Strategy Team, National Counterterrorism Center

Brig. Gen. Richard J. Tubb
Physician to the President, White House Medical Unit

AFA Almanac

By Frances McKenney, Assistant Managing Editor

Chapters of the Year

Year	Recipient(s)
1953	San Francisco Chapter
1954	Santa Monica Area Chapter (Calif.)
1955	San Fernando Valley Chapter (Calif.)
1956	Utah State AFA
1957	H.H. Arnold Chapter (N.Y.)
1958	San Diego Chapter
1959	Cleveland Chapter
1960	San Diego Chapter
1961	Chico Chapter (Calif.)
1962	Fort Worth Chapter (Tex.)
1963	Colin P. Kelly Chapter (N.Y.)
1964	Utah State AFA
1965	Idaho State AFA
1966	New York State AFA
1967	Utah State AFA
1968	Utah State AFA
1969	*(no presentation)*
1970	Georgia State AFA
1971	Middle Georgia Chapter
1972	Utah State AFA
1973	Langley Chapter (Va.)
1974	Texas State AFA
1975	Alamo Chapter (Tex.) and San Bernardino Area Chapter (Calif.)
1976	Scott Memorial Chapter (Ill.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)
1980	Central Oklahoma (Gerrity) Chapter
1981	Alamo Chapter (Tex.)
1982	Chicagoland-O'Hare Chapter (Ill.)
1983	Charles A. Lindbergh Chapter (Conn.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan Chapter (Colo.)
1985	Cape Canaveral Chapter (Fla.)
1986	Charles A. Lindbergh Chapter (Conn.)
1987	Carl Vinson Memorial Chapter (Ga.)
1988	Gen. David C. Jones Chapter (N.D.)
1989	Thomas B. McGuire Jr. Chapter (N.J.)
1990	Gen. E.W. Rawlings Chapter (Minn.)
1991	Paul Revere Chapter (Mass.)
1992	Central Florida Chapter and Langley Chapter (Va.)
1993	Green Valley Chapter (Ariz.)
1994	Langley Chapter (Va.)
1995	Baton Rouge Chapter (La.)
1996	Montgomery Chapter (Ala.)
1997	Central Florida Chapter
1998	Ark-La-Tex Chapter (La.)
1999	Hurlburt Chapter (Fla.)
2000	Wright Memorial Chapter (Ohio)
2001	Lance P. Sijan Chapter (Colo.)
2002	Eglin Chapter (Fla.)
2003	Hurlburt Chapter (Fla.)
2004	Carl Vinson Memorial Chapter (Ga.)
2005	Central Florida Chapter
2006	Enid Chapter (Okla.)

Profiles of AFA Membership

As of June 2006 (Total 127,749)

54% One-year members
13% Three-year members
34% Life members

16% Active duty military
51% Retired military
17% Former service
6% Guard and Reserve
7% No military service
3% Cadet
2% Spouse/widow(er)

Of AFA's service members (who account for about six percent of USAF total strength):

71% are officers
29% are enlisted

Of AFA's retired military members:

72% are retired officers
28% are retired enlisted

AFA "Member of the Year" Award Recipients

State names refer to recipient's home state at the time of the award.

Year	Recipient(s)
1953	Julian B. Rosenthal (N.Y.)
1954	George A. Anderl (Ill.)
1955	Arthur C. Storz (Neb.)
1956	Thos. F. Stack (Calif.)
1957	George D. Hardy (Md.)
1958	Jack B. Gross (Pa.)
1959	Carl J. Long (Pa.)
1960	O. Donald Olson (Colo.)
1961	Robert P. Stewart (Utah)
1962	*(no presentation)*
1963	N.W. DeBerardinis (La.) and Joe L. Shosid (Tex.)
1964	Maxwell A. Kriendler (N.Y.)
1965	Milton Caniff (N.Y.)
1966	William W. Spruance (Del.)
1967	Sam E. Keith Jr. (Tex.)
1968	Marjorie O. Hunt (Mich.)
1969	*(no presentation)*
1970	Lester C. Curl (Fla.)
1971	Paul W. Gaillard (Neb.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)
1973	Joe Higgins (Calif.)
1974	Howard T. Markey (D.C.)
1975	Martin M. Ostrow (Calif.)
1976	Victor R. Kregel (Tex.)
1977	Edward A. Stearn (Calif.)
1978	William J. Demas (N.J.)
1979	Alexander C. Field Jr. (Ill.)
1980	David C. Noerr (Calif.)
1981	Daniel F. Callahan (Fla.)
1982	Thomas W. Anthony (Md.)
1983	Richard H. Becker (Ill.)
1984	Earl D. Clark Jr. (Kan.)
1985	George H. Chabbott (Del.) and Hugh L. Enyart (Ill.)
1986	John P.E. Kruse (N.J.)
1987	Jack K. Westbrook (Tenn.)
1988	Charles G. Durazo (Va.)
1989	Oliver R. Crawford (Tex.)
1990	Cecil H. Hopper (Ohio)
1991	George M. Douglas (Colo.)
1992	Jack C. Price (Utah)
1993	Lt. Col. James G. Clark (D.C.)
1994	William A. Lafferty (Ariz.)
1995	William N. Webb (Okla.)
1996	Tommy G. Harrison (Fla.)
1997	James M. McCoy (Neb.)
1998	Ivan L. McKinney (La.)
1999	Jack H. Steed (Ga.)
2000	Mary Anne Thompson (Va.)
2001	Charles H. Church Jr. (Kan.)
2002	Thomas J. Kemp (Tex.)
2003	W. Ron Goerges (Ohio)
2004	Doyle E. Larson (Minn.)
2005	Charles A. Nelson (S.D.)
2006	Craig E. Allen (Utah)

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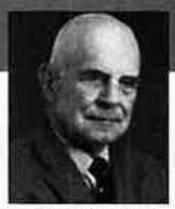
Air Force Association Chairmen of the Board

Edward P. Curtis
1946-47



Jimmy Doolittle
1947-49

C.R. Smith
1949-50

Carl A. Spaatz
1950-51

Thomas G. Lanphier Jr.
1951-52

Harold C. Stuart
1952-53

Arthur F. Kelly
1953-54

George C. Kenney
1954-55

John R. Alison
1955-56

Gill Robb Wilson
1956-57

John P. Henebry
1957-58

James M. Trail
1958-59

Julian B. Rosenthal
1959-60

Howard T. Markey
1960-61

Thos. F. Stack
1961-62

Joe Foss
1962-63

Jack B. Gross
1963-64

W. Randolph Lovelace II
1964-65

George D. Hardy
1966-67

Jess Larson
1967-71

George D. Hardy
1971-72

Joe L. Shosid
1972-73

Martin M. Ostrow
1973-75

Joe L. Shosid
1975-76

Gerald V. Hasler
1976-77

George M. Douglas
1977-79

Daniel F. Callahan
1979-81

Victor R. Kregel
1981-82

John G. Brosky
1982-84

David L. Blankenship
1984-85

Edward A. Stearn
1985-86

Martin H. Harris
1986-88

Sam E. Keith Jr.
1988-90

Jack C. Price
1990-92

Oliver R. Crawford
1992-94

James M. McCoy
1994-96

Gene Smith
1996-98

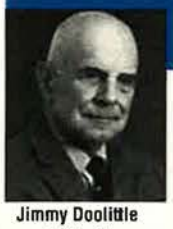
Doyle E. Larson
1998-2000

Thomas J. McKee
2000-02

John J. Politi
2002-04

Stephen P. Condon
2004-06

Air Force Association National Presidents



Jimmy Doolittle
1946-47

Thomas G. Lanphier Jr.
1947-48

C.R. Smith
1948-49

Robert S. Johnson
1949-51

Harold C. Stuart
1951-52

Arthur F. Kelly
1952-53

George C. Kenney
1953-54

John R. Alison
1954-55

Gill Robb Wilson
1955-56

John P. Henebry
1956-57

Peter J. Schenk
1957-59

Howard T. Markey
1959-60

Thos. F. Stack
1960-61

Joe Foss
1961-62

John B. Montgomery
1962-63

W. Randolph Lovelace II
1963-64

Jess Larson
1964-67

Robert W. Smart
1967-69

George D. Hardy
1969-71

Martin M. Ostrow
1971-73

Joe L. Shosid
1973-75

George M. Douglas
1975-77

Gerald V. Hasler
1977-79

Victor R. Kregel
1979-81

John G. Brosky
1981-82

David L. Blankenship
1982-84

Martin H. Harris
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Sam E. Keith Jr.
1986-88

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1988-90

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1990-92

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1992-94

Gene Smith
1994-96

Doyle E. Larson
1996-98

Thomas J. McKee
1998-2000

John J. Politi
2000-02

Stephen P. Condon
2002-04

Robert E. Largent
2004-06

Transitional Vice Chairman

L. Boyd Anderson
April 1, 2006 -

AFA's Regions, States, and Chapters

These figures indicate the number of affiliated members as of June 30, 2006. Listed below the name of each region is the region president.

CENTRAL EAST REGION 11,812
William "Skip" Williams

Delaware 601
Brig. Gen. Bill Spruance 164
Delaware Galaxy 437

District of Columbia 571
Nation's Capital 571

Maryland 2,342
Baltimore* 730
Central Maryland 429
Thomas W. Anthony 1,183

Virginia 7,965
Danville 56
Donald W. Steele Sr. Memorial 3,215
Gen. Charles A. Gabriel 1,265
Langley 1,493
Leigh Wade 140
Northern Shenandoah Valley 252
Richmond 608
Roanoke 337
Tidewater 375
William A. Jones III 224

West Virginia 333
Brig. Gen. Pete Everest 61
Chuck Yeager 272

FAR WEST REGION 11,781
Dennis R. Davoren

California 11,781
Bob Hope 883
Brig. Gen. Robert F. Travis 849
C. Farinha Gold Rush 1,426
Charles Hudson 128
David J. Price/Beale 469
Fresno* 354
Gen. B.A. Schriever Los Angeles 590
General Doolittle Los Angeles Area* 1,338
Golden Gate* 657
High Desert 233
Maj. Gen. Charles I. Bennett Jr. 318
Monterey Bay Area 268
Orange County/Gen. Curtis E. LeMay 793
Palm Springs 453
Robert H. Goddard 690
San Diego 886
San Gabriel Valley 353
Tennessee Ernie Ford 688
William J. "Pete" Knight 405

Hawaii 813
Hawaii* 813

FLORIDA REGION 10,779
Emil Friedauer

Florida 10,779
Brig. Gen. James R. McCarthy 393
Cape Canaveral 1,137
Central Florida 1,472
Col. H.M. "Bud" West 332
Col. Loren D. Evenson 529
Eglin 1,514
Falcon 489
Florida Highlands 315
Gen. Nathan F. Twining 465
Gold Coast 795
Hurlburt 694
Jerry Waterman 1,178
John C. Meyer 357
John W. DeMilly Jr. 299
Miami 322
Pensacola 167
Red Tail Memorial 321

GREAT LAKES REGION 8,458
William A. Howard Jr.

Indiana 1,548
Central Indiana 454
Columbus-Bakalar 110
Fort Wayne 250
Grissom Memorial 271
Lawrence D. Bell Museum 225
Southern Indiana 238

Kentucky 713
Gen. Russell E. Dougherty 443
Lexington 270

Michigan 1,928
Battle Creek 122
Kalamazoo 458
Lake Superior Northland 136
Lloyd R. Leavitt Jr. 166
Mount Clemens 940
PE-TO-SE-GA 106

Ohio 4,269
Capt. Eddie Rickenbacker Memorial* 677
Frank P. Lahm 520
Gen. Joseph W. Ralston 269
North Coast* 302
Steel Valley 192
Wright Memorial* 2,309

MIDWEST REGION 7,871
Judy K. Church

Illinois 2,954
Chicagoland-O'Hare 1,203
Heart of Illinois 214
Land of Lincoln 350
Scott Memorial 1,187

Iowa 758
Fort Dodge 91
Gen. Charles A. Horner 264
Northeast Iowa 229
Richard D. Kisling 174

Kansas 832
Contrails 66
Lt. Erwin R. Bleckley 509
Maj. Gen. Edward R. Fry 257

Missouri 1,730
Earl D. Clark Jr. 314
Harry S. Truman 631
Spirit of St. Louis 785

Nebraska 1,597
Ak-Sar-Ben 1,336
Lincoln 261

NEW ENGLAND REGION 3,919
Joseph P. Bisognano Jr.

Connecticut 784
Flying Yankees/Gen. George C. Kenney 468
Lindbergh/Sikorsky 316

Massachusetts 1,871
Boston 97
Minuteman 309
Otis 169
Paul Revere 639
Pioneer Valley 311
Taunton 170
Worcester* 176

New Hampshire 772
Brig. Gen. Harrison R. Thyng 772

Rhode Island 259
Metro Rhode Island 218
Newport Blue & Gold 41

Vermont 233
Green Mountain 233

NORTH CENTRAL REGION 3,674
James W. Simons

Minnesota 1,237
Gen. E.W. Rawlings 995
Richard I. Bong 242

Montana 317
Big Sky 317

North Dakota 470
Gen. David C. Jones 217
Happy Hooligan 134
Red River Valley 119

South Dakota 502
Dacotah 240
Rushmore 262

Wisconsin 1,148
Billy Mitchell 509
Capt. William J. Henderson 342
Madison 297

NORTHEAST REGION 7,691
Amos Chalif

New Jersey 2,089
Brig. Gen. E. Wade Hampton 167
Brig. Gen. Frederick W. Castle 172
Hangar One 157
Highpoint 126
John Currie Memorial 73
Mercer County 181
Sal Capriglione 305
Thomas B. McGuire Jr. 622
Shooting Star 286

New York 2,882
Albany-Hudson Valley* 397
Chautauqua 65
Forrest L. Vosler 474
Gen. Carl A. "Tooey" Spaatz 221
Gen. Daniel "Chappie" James Jr. Memorial 95
Genesee Valley 250
Iron Gate 140
L.D. Bell-Niagara Frontier 349
Long Island 891

Pennsylvania 2,720
Altoona 56
Eagle 61
Greater Pittsburgh* 337
Joe Walker-Mon Valley 123
Lehigh Valley 246
Liberty Bell 705
Lt. Col. B.D. "Buzz" Wagner 106
Mifflin County* 103
Olmsted 320
Pocono Northeast 211
Total Force 158
York-Lancaster 294

NORTHWEST REGION 5,152
Gary A. Hoff

Alaska 901
Edward J. Monaghan 645
Fairbanks Midnight Sun 256

Idaho 111
Snake River Valley 111

Oregon 1,187
Bill Harris 333
Columbia Gorge* 854

Washington 2,953
Greater Seattle 1,053
Inland Empire 646
McChord 1,254

*These chapters were chartered prior to Dec. 31, 1948, and are considered original charter chapters; the North Coast Chapter of Ohio was formerly the Cleveland Chapter; and the Columbia Gorge Chapter of Oregon was formerly the Portland Chapter.

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ROCKY MOUNTAIN REGION 6,637
Ted Helsten

Colorado 4,665
Gen. Robert E. Huyser 166
Lance P. Sijan 2,746
Mel Harmon 159
Mile High 1,594

Utah 1,586
Northern Utah 643
Salt Lake 412
Ute-Rocky Mountain 531

Wyoming 386
Cheyenne Cowboy 386

SOUTH CENTRAL REGION 7,097
George P. "Peyton" Cole Jr.

Alabama 2,058
Birmingham 378
Montgomery 1,328
Tennessee Valley 352

Arkansas 1,101
David D. Terry Jr. 738
Ouachita 140
Razorback 223

Louisiana 1,107
Ark-La-Tex 714
Maj. Gen. Oris B. Johnson 393

Mississippi 1,045
Golden Triangle 347
Jackson 157
John C. Stennis 439
Meridian 102

Tennessee 1,786
Chattanooga 129
Everett R. Cook 426
Gen. Bruce K. Holloway 573
H.H. Arnold Memorial 152
Maj. Gen. Dan F. Callahan 506

SOUTHEAST REGION 8,132
David T. "Bush" Hanson

Georgia 3,872
Carl Vinson Memorial 1,626
Dobbins 1,627
Savannah 349
South Georgia 270

North Carolina 2,199
Blue Ridge 378
Cape Fear 261
Kitty Hawk 79
Pope 449
Scott Berkeley 431
Tarheel 601

South Carolina 2,061
Charleston 528
Columbia Palmetto 437
Ladewig-Shine Memorial 195
Strom Thurmond 427
Swamp Fox 474

SOUTHWEST REGION 7,063
Robert J. Herculson Jr.

Arizona 4,079
Cochise 121
Frank Luke 2,181
Prescott/Goldwater 356
Tucson 1,421

Nevada 1,389
Thunderbird 1,389

New Mexico 1,595
Albuquerque 1,106
Fran Parker 336
Llano Estacado 153

TEXOMA REGION 13,479
Buster Horlen

Oklahoma 2,562
Altus 255
Central Oklahoma (Gerrity) 1,396
Enid 458
Tulsa 453

Texas 10,917
Abilene 294
Aggieland 210
Alamo 3,668
Austin 773
Concho 290
Dallas 923
Del Rio 128
Denton 425
Fort Worth 1,769
Gen. Charles L. Donnelly Jr. 378
Ghost Squadron 119
Heart of the Hills 143
Northeast Texas 430
Panhandle AFA 242
San Jacinto 1,125

AFA's Overseas Chapters

CHAPTER	LOCATION
	United States Air Forces in Europe (USAFE)
Charlemagne	Geilenkirchen, Germany
Dolomiti	Aviano AB, Italy
Lufbery-Campbell	Ramstein AB, Germany
Spangdahlem	Spangdahlem AB, Germany
United Kingdom	Lakenheath, UK
	Pacific Air Forces (PACAF)
Keystone	Kadena AB, Japan
MiG Alley	Osan AB, South Korea
Tokyo	Tokyo, Japan
	Supreme Headquarters Allied Powers Europe (SHAPE)
Gen. Lauris G. Norstad	Mons, Belgium

AFA's First National Officers and Board of Directors

This panel of officers and directors acted temporarily until a representative group was democratically elected by membership at the first national convention, in September 1947.

OFFICERS

President Jimmy Doolittle
First Vice President Edward P. Curtis
Second Vice President Meryll Frost
Third Vice President Thomas G. Lanphier Jr.
Secretary Sol A. Rosenblatt
Assistant Secretary Julian B. Rosenthal
Treasurer W. Deering Howe
Executive Director Willis S. Fitch

BOARD OF DIRECTORS

John S. Allard
H.M. Baldridge
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Burton E. Donaghy
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Reiland Quinn
Rufus Rand
Earl Sneed
James M. Stewart
Forrest Vosler
Benjamin F. Warmer
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The Twelve Founders

John S. Allard, Bronxville, N.Y.
Everett R. Cook, Memphis, Tenn.
Edward P. Curtis, Rochester, N.Y.
Jimmy Doolittle, Los Angeles
W. Deering Howe, New York
Rufus Rand, Sarasota, Fla.
Sol A. Rosenblatt, New York
Julian B. Rosenthal, New York
James M. Stewart, Beverly Hills, Calif.
Lowell P. Weicker, New York
Cornelius Vanderbilt Whitney, New York
John Hay Whitney, New York

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A toast to your efforts.

H.H. Arnold Award Recipients

Until 1986, AFA's highest aerospace award was the H.H. Arnold Award. Named for the World War II leader of the Army Air Forces, it was presented annually in recognition of the most outstanding contributions in the field of aerospace activity. In 1986, the Arnold Award was redesignated AFA's highest honor to a member of the armed forces in the field of national security. It continues to be presented annually.

Year	Recipient(s)
1948	W. Stuart Symington, Secretary of the Air Force
1949	Maj. Gen. William H. Tunner and the men of the Berlin Airlift
1950	Airmen of the United Nations in the Far East
1951	Gen. Curtis E. LeMay and the personnel of Strategic Air Command
1952	Sens. Lyndon B. Johnson and Joseph C. O'Mahoney
1953	Gen. Hoyt S. Vandenberg, former Chief of Staff, USAF
1954	John Foster Dulles, Secretary of State
1955	Gen. Nathan F. Twining, Chief of Staff, USAF
1956	Sen. W. Stuart Symington
1957	Edward P. Curtis, special assistant to the President
1958	Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC
1959	Gen. Thomas S. Power, CINC, SAC
1960	Gen. Thomas D. White, Chief of Staff, USAF
1961	Lyle S. Garlock, Assistant Secretary of the Air Force
1962	A.C. Dickieson and John R. Pierce, Bell Telephone Laboratories
1963	The 363rd Tactical Recon. Wing and the 4080th Strategic Wing
1964	Gen. Curtis E. LeMay, Chief of Staff, USAF
1965	The 2nd Air Division, PACAF
1966	The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs
1967	Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF
1968	Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew
1969	*(No presentation)*
1970	Apollo 11 team (J.L. Atwood; Lt. Gen. S.C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)
1971	John S. Foster Jr., Dir. of Defense Research and Engineering
1972	Air units of the Allied Forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)
1973	Gen. John D. Ryan (Ret.), former Chief of Staff, USAF
1974	Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff
1975	James R. Schlesinger, Secretary of Defense
1976	Sen. Barry M. Goldwater
1977	Sen. Howard W. Cannon
1978	Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe
1979	Sen. John C. Stennis
1980	Gen. Richard H. Ellis, USAF, CINC, SAC
1981	Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff
1982	Gen. Lew Allen Jr. (Ret.), former Chief of Staff, USAF
1983	Ronald W. Reagan, President of the United States
1984	The President's Commission on Strategic Forces (the Scowcroft Commission)
1985	Gen. Bernard W. Rogers, USA, SACEUR
1986	Gen. Charles A. Gabriel (Ret.), former Chief of Staff, USAF
1987	Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1988	Men and women of the Ground-Launched Cruise Missile team
1989	Gen. Larry D. Welch, Chief of Staff, USAF
1990	Gen. John T. Chain, CINC, SAC
1991	Lt. Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1992	Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1993	Gen. Merrill A. McPeak, Chief of Staff, USAF
1994	Gen. John Michael Loh, Cmdr., Air Combat Command
1995	World War II Army Air Forces veterans
1996	Gen. Ronald R. Fogleman, Chief of Staff, USAF
1997	Men and women of the United States Air Force
1998	Gen. Richard E. Hawley, Cmdr., ACC
1999	Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
2000	Gen. Michael E. Ryan, Chief of Staff, USAF
2001	Gen. Joseph W. Ralston, CINC, EUCOM
2002	Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
2003	Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
2004	Gen. John P. Jumper, Chief of Staff, USAF
2005	Gen. Gregory S. Martin, Cmdr., AFMC
2006	Gen. Lance W. Lord, Cmdr., AFSPC

John R. Alison Award Recipients

Established in 1992, the John R. Alison Award is AFA's highest honor for industrial leadership.

1992	Norman R. Augustine, Chairman, Martin Marietta
1993	Daniel M. Tellep, Chm. and CEO, Lockheed
1994	Kent Kresa, CEO, Northrop Grumman
1995	C. Michael Armstrong, Chm. and CEO, Hughes Aircraft
1996	Harry Stonecipher, Pres. and CEO, McDonnell Douglas
1997	Dennis J. Picard, Chm. and CEO, Raytheon
1998	Philip M. Condit, Chm. and CEO, Boeing
1999	Sam B. Williams, Chm. and CEO, Williams International
2000	Simon Ramo and Dean E. Wooldridge, missile pioneers
2001	George David, Chm. and CEO, United Technologies
2002	Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction
2003	Joint Direct Attack Munition Industry Team, Boeing
2004	Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems
2005	Richard Branson, Chm., Virgin Atlantic Airways and Virgin Galactic
2006	Ronald D. Sugar, Chm. and CEO, Northrop Grumman

W. Stuart Symington Award Recipients

Since 1986, AFA's highest honor to a civilian in the field of national security has been the W. Stuart Symington Award. The award, presented annually, is named for the first Secretary of the Air Force.

Year	Recipient(s)
1986	Caspar W. Weinberger, Secretary of Defense
1987	Edward C. Aldridge Jr., Secretary of the Air Force
1988	George P. Schultz, Secretary of State
1989	Ronald W. Reagan, former President of the United States
1990	John J. Welch, Asst. SECAF (Acquisition)
1991	George Bush, President of the United States
1992	Donald B. Rice, Secretary of the Air Force
1993	Sen. John McCain (R-Ariz.)
1994	Rep. Ike Skelton (D-Mo.)
1995	Sheila E. Widnall, Secretary of the Air Force
1996	Sen. Ted Stevens (R-Alaska)
1997	William Perry, former Secretary of Defense
1998	Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)
1999	F. Whitten Peters, Secretary of the Air Force
2000	Rep. Floyd Spence (R-S.C.)
2001	Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)
2002	Rep. James V. Hansen (R-Utah)
2003	James G. Roche, Secretary of the Air Force
2004	Peter B. Teets, Undersecretary of the Air Force
2005	Rep. Duncan Hunter (R-Calif.)

Gold Life Member Card Recipients

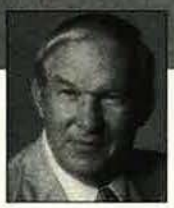
Awarded to members whose AFA record, production, and accomplishment on a national level have been outstanding over a period of years.

Name	Year	Card No.
Gill Robb Wilson	1957	1
Jimmy Doolittle	1959	2
Arthur C. Storz Sr.	1961	3
Julian B. Rosenthal	1962	4
Jack B. Gross	1964	5
George D. Hardy	1965	6
Jess Larson	1967	7
Robert W. Smart	1968	8
Martin M. Ostrow	1973	9
James H. Straubel	1980	10
Martin H. Harris	1988	11
Sam E. Keith Jr.	1990	12
Edward A. Stearn	1992	13
Dorothy L. Flanagan	1994	14
John O. Gray	1996	15
Jack C. Price	1997	16
Nathan H. Mazer	2002	17
John R. Alison	2004	18

Aerospace Education Foundation Chairmen of the Board

W. Randolph Lovelace II
1963-64

Laurence S. Kuter
1964-66



Walter J. Hesse
1966-69

J. Gilbert Nettleton Jr.
1969-73

George D. Hardy
1973-75

Barry M. Goldwater
1975-86

George D. Hardy
1986-89

James M. Keck
1989-94

Walter E. Scott
1994-96

Thomas J. McKee
1996-98

Michael J. Dugan
1998-2000

Jack C. Price
2000-02

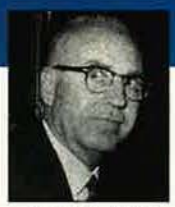
Richard B. Goetze Jr.
2002-03

L. Boyd Anderson
2003-06*

* On April 1, 2005, the Air Force Association and the Aerospace Education Foundation combined their activities under the title AFA. L. Boyd Anderson, the last AEF Chairman, became Vice Chairman of AFA for a transitional period.

Aerospace Education Foundation Presidents

John B. Montgomery
1963-64



Lindley J. Stiles
1964-66

B. Frank Brown
1966-67

Leon M. Lessinger
1967-68

L.V. Rasmussen
1968-71

Leon M. Lessinger
1971-73

Wayne O. Reed
1973-74

William L. Ramsey
1975-81

Don C. Garrison
1981-84

George D. Hardy
1984-86

Eleanor P. Wynne
1986-87

James M. Keck
1988-89

Gerald V. Hasler
1989-94

Thomas J. McKee
1994-96

Walter E. Scott
1996-98

Jack C. Price
1998-2000

Richard B. Goetze Jr.
2000-02

L. Boyd Anderson
2002-03

Mary Anne Thompson
2003-06*

* On April 1, 2006, the Air Force Association and the Aerospace Education Foundation combined their activities under the title AFA.

AFA Executive Directors

Willis S. Fitch
1946-47

James H. Straubel
1948-80

Russell E. Dougherty
1980-86

David L. Gray
1986-87

John O. Gray
1987-88

Charles L. Donnelly Jr.
1988-89

John O. Gray
1989-90

Monroe W. Hatch Jr.
1990-95

John A. Shaud
1995-2002

Donald L. Peterson
2002-

AFA National Secretaries

Sol A. Rosenblatt	1946-47
Julian B. Rosenthal	1947-59
George D. Hardy	1959-66
Joseph L. Hodges	1966-68
Glenn D. Mishler	1968-70
Nathan H. Mazer	1970-72
Martin H. Harris	1972-76
Jack C. Price	1976-79
Earl D. Clark Jr.	1979-82
Sherman W. Wilkins	1982-85
A.A. "Bud" West	1985-87
Thomas J. McKee	1987-90
Thomas W. Henderson	1990-91
Mary Ann Seibel	1991-94
Mary Anne Thompson	1994-97
William D. Croom Jr.	1997-2000
Daniel C. Hendrickson	2000-03
Thomas J. Kemp	2003-06

AFA National Treasurers

W. Deering Howe	1946-47
G. Warfield Hobbs	1947-49
Benjamin Brinton	1949-52
George H. Haddock	1952-53
Samuel M. Hecht	1953-57
Jack B. Gross	1957-62
Paul S. Zuckerman	1962-66
Jack B. Gross	1966-81
George H. Chabbott	1981-87
William N. Webb	1987-95
Charles H. Church Jr.	1995-2000
Charles A. Nelson	2000-05
Steven R. Lundgren	2005-

AFA Membership

Year	Total	Life Members	Year	Total	Life Members
1946	51,243	32	1977	155,850	1,218
1947	104,750	55	1978	148,711	1,541
1948	56,464	68	1979	147,136	1,869
1949	43,801	70	1980	156,394	2,477
1950	38,948	79	1981	170,240	3,515
1951	34,393	81	1982	179,149	7,381
1952	30,716	356	1983	198,563	13,763
1953	30,392	431	1984	218,512	18,012
1954	34,486	435	1985	228,621	23,234
1955	40,812	442	1986	232,722	27,985
1956	46,250	446	1987	237,279	30,099
1957	51,328	453	1988	219,195	32,234
1958	48,026	456	1989	204,309	34,182
1959	50,538	458	1990	199,851	35,952
1960	54,923	464	1991	194,312	37,561
1961	60,506	466	1992	191,588	37,869
1962	64,336	485	1993	181,624	38,604
1963	78,034	488	1994	175,122	39,593
1964	80,295	504	1995	170,881	39,286
1965	82,464	514	1996	161,384	39,896
1966	85,013	523	1997	157,862	41,179
1967	88,995	548	1998	152,330	41,673
1968	97,959	583	1999	148,534	42,237
1969	104,886	604	2000	147,336	42,434
1970	104,878	636	2001	143,407	42,865
1971	97,639	674	2002	141,117	43,389
1972	109,776	765	2003	137,035	42,730
1973	114,894	804	2004	133,812	42,767
1974	128,995	837	2005	131,481	43,094
1975	139,168	898	2006	127,749	43,266
1976	148,202	975			

Dottie Flanagan Staff Award of the Year

A donation from the late Jack B. Gross, national director emeritus, enables AFA to honor staff members each quarter. Those members become eligible for the staff award of the year.

1992	Doreatha Major
1993	Jancy Bell
1994	Gilbert Burgess
1995	David Huynh
1996	Sherry Coombs
1997	Katherine DuGarm
1998	Suzann Chapman
1999	Frances McKenney
2000	Ed Cook
2001	Katie Doyle
2002	Jeneathia Wright
2003	Jim Brown
2004	Pearlie Draughn
2005	Ursula Smith

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AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

USAF photo by Carl Burnett

AFA Board Chairman Pat Condon (left) listens to Gen. Bruce Carlson, head of Air Force Materiel Command, at a symposium in Utah. See "Focus on Defense."

Smart Ops: Lean, Efficient

Air Force Association Chairman of the Board Stephen P. "Pat" Condon delivered opening remarks at the 27th annual Focus on Defense symposium in June in Layton, Utah.

On behalf of AFA, he welcomed the more than 350 DOD and industry leaders to the three-day conference sponsored by the Ogden Air Logistics Center at Hill AFB, Utah, and AFA's **Northern Utah, Salt Lake,** and **Ute-Rocky Mountain Chapters.**

The focus this year was on Air Force Smart Operations 21, the process-improvement initiatives already showing success at USAF's air logistics centers and in some maintenance areas. Condon stressed the importance of AFSO21 in meeting the Air Force's resource needs.

Guest speaker Brig. Gen. S. Taco Gilbert III, director of the AFSO21 effort, described the program's aim this way: "It's where everyone shows up every day asking themselves, 'What can I do to improve this process?' "

Another keynote speaker, Lt. Gen. Donald J. Wetekam, deputy chief of staff for logistics, installations, and mission support, said improving efficiency in shops has meant that "products are available to the warfighter today, not sitting on a shelf at Hill waiting to be repaired." He listed examples of quicker processing time at bases such as Langley, Mountain Home, and Dover and at sites as diverse as a wheel and tire shop and a dental clinic.

Participating in the conference were Gen. Bruce Carlson, commander of Air Force Materiel Command, Gen. Duncan J. McNabb, commander of Air Mobility Command, Harry Schulte from Raytheon Missile Systems, and Peter J. Hennessey, from Battelle National Security Division.

2,000 Miles Away

The symposium took place more than 2,000 miles away from its home base, but the **Paul Revere Chapter** of Massachusetts again co-hosted the annual Mission Planning User's Conference in Las Vegas in May.

AFA Board Chairman Pat Condon was among the AFA officials at this 12th annual conference and explained to the audience that the Revere Chapter's sponsorship of the MPUC was a prime example of how AFA supports the Air Force.

The conference brought together 1,700 developers, acquisition personnel, users, and maintainers of mission planning systems. During five days of panel discussions and breakout sessions, participants gained perspectives on mission planning, learned about the latest technology in the field, and received training.

Gen. William R. Looney III, head of Air Education and Training Command, was among the keynote speakers.

Attendees from 17 countries were on hand. Paul Revere Chapter members who traveled to the conference included Chapter President Steven Negron, Treasurer Angela Dupont, Tim Bashara, Irene Biddy, Ned Clay, Renee Doucette, and Marian A. McGovern.

Electronic Systems Center's Mission Planning Program Office at Hanscom AFB, Mass., co-hosted the conference, while the AFA chapter—located in Bedford, Mass.—coordinated industry involvement.

On Parade

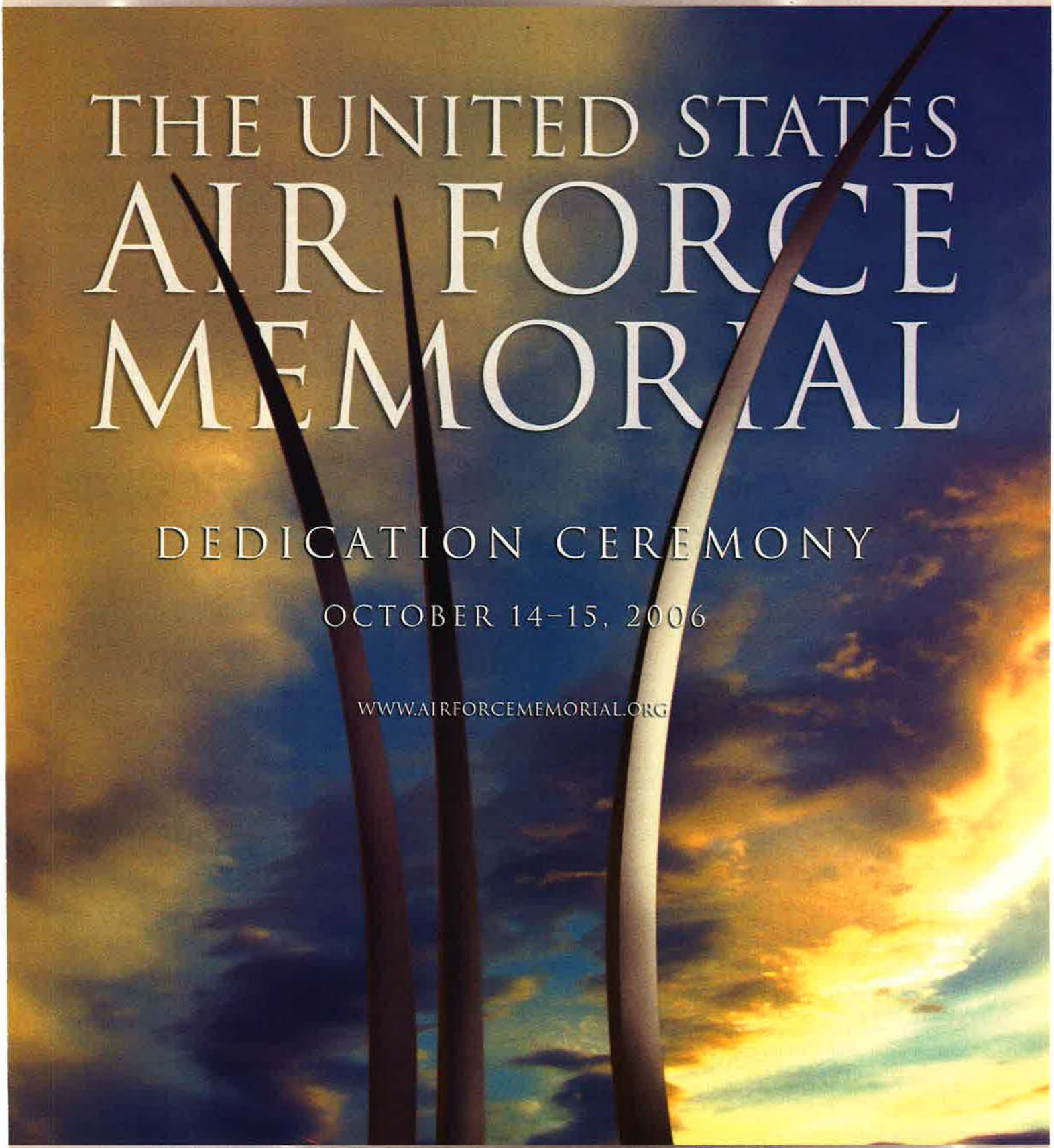
The Virginia Military Institute corps of cadets—some 1,300 of them—conducted a full-dress parade on the grounds of their Lexington campus in late April, observed by AFA members in town for the Virginia State Convention hosted by the **Roanoke Chapter.**

The conventioneers took a break during their business meeting to attend this hour-long parade at VMI, the nation's first state military college. Later, many of the school's cadets, as well as AFROTC cadets from Virginia Polytechnic Institute and State University, in Blacksburg, attended the convention's Saturday evening banquet. A VMI color guard posted the colors at that event.

Maj. Gen. Daniel J. Darnell, a 1975 graduate of VMI and today USAF's director of legislative liaison, was the guest speaker. He delivered a PowerPoint presentation on Operation Iraqi Freedom.

Noting that Darnell was senior director of the Combined Air Operations Center at Prince Sultan AB, Saudi Arabia, when OIF began, Chapter President Scott Van Cleef said that Darnell's talk capped the chapter's year-long program of firsthand accounts of air warfare, presented by World War II, Korea, and Vietnam War veterans.

Awards presentations that evening included the chapter's Teacher of the Year honor, which went to Julie Kolb, who teaches basic engineering at Arnold R. Burton Technology Center in Salem.



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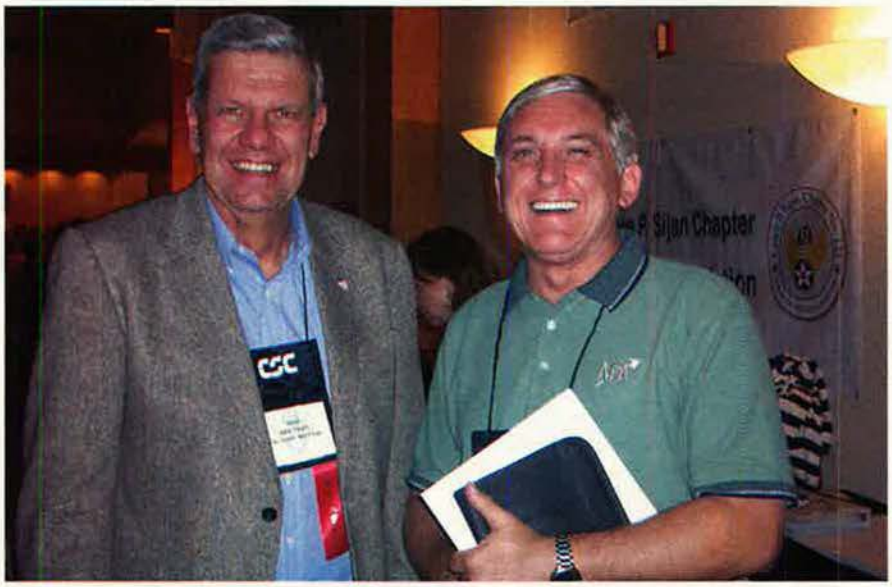

AFA National President Bob Largent (right) attended a symposium in Colorado. At left is planning committee chairman Mike Drennan. See "Symposium on Space."

Symposium on Space

At a resort in Keystone, Colo., the **Lance P. Sijan Chapter** hosted its Space Warfare Symposium in June, counting among its VIP guests Robert E. "Bob" Largent, AFA National President, and senior leaders from Air Force Space Command and industry.

A wide range of discussion topics covered the role of space in national security and in the Global War on Terror. Also included was information on support to US Northern Command during Hurricane Katrina, the senior enlisted leader perspective, and professional development for enlisted personnel in the space career fields.

Peter B. Teets, former acting Secretary of the Air Force and undersecretary for the service, delivered one of the key speeches. Other highlights of the three-day symposium included a golf tournament and the presentation of the chapter's Gen. Jerome F. O'Malley Award to 1st Lt. Randall Claar. Sharon O'Malley-Burg, the late general's daughter, joined Chapter President Brian A. Binn in making the presentation to Claar.

The chapter's newsletter noted that it took a 15-member committee seven months to plan the event. Headed by Mike Drennan, Henry Baird, and Kevin Estrem, the committee rounded up a dozen corporate sponsors to pitch in with manpower and funds.

Complete Tour

At Hill AFB, Utah, **Northern Utah Chapter** member 1st Lt. Alex R. White arranged a comprehensive orientation to an ICBM wing for Pat Condon—and built in plenty of time for the AFA Board Chairman to promote the association.

On an afternoon in July, Condon received an hour briefing on the 526th ICBM Systems Wing at Hill and toured the Strategic Missile Integration Complex to see a Minuteman III launch control center. Then came the chance, as White described it, "to see how we're turning the technology into systems": Just off base in Clearfield, Condon visited a Minuteman III Stage 3 composite facility run by contractor ATK and later toured an aerojet propulsion facility.

White, who is the wing's executive officer, arranged for the orientation to end with a "mentoring session" when Condon met with the wing's younger airmen.

For the Record

"Mr. Speaker, I rise today to congratulate Mr. Ryan Miller of Arlington, Virginia, on being awarded the Air Force Association **D.W. Steele Chapter** Teacher of the Year Award."

So said US Rep. James P. Moran (D-Va.), when he read into the Congressional Record on June 28 a description of the accomplishments of Miller, an astronomy and environmental science teacher at Washington-Lee High School.

Donald W. Steele Sr. Memorial Chapter member Heath D. Bumgardner, Moran's legislative assistant, arranged for the honor.

Explaining how this came about, Chapter President George DeFilippi said that he invited the Congressman and Bumgardner to a chapter meeting featuring TOY and scholarship presentations. Responding to the invitation, Bumgardner noted that Moran has always had an interest in education issues and had asked for information on the chapter's teacher of the year.

Full Calendar

In Maryland in May, the **Thomas W. Anthony Chapter** officers were pulling on AFA polo shirts, pinning on their AFA nametags, or donning their AFA blazers nearly every day.

They presented awards at a banquet for the AFROTC detachment at the University of Maryland, College Park, and at the Community College of the Air Force graduation at Andrews AFB, Md. They manned their AFA booth at the annual Aerospace Careers Day, sponsored by the Tuskeegee Airmen and D.C. National Guard, at Andrews, then set it up again a week later for the base's annual Joint Services Open House. During the three-day open house, they hosted the visiting Canadian Snowbirds aerial demonstration team and sponsored the opening day breakfast.

Representing AFA at different events were chapter stalwarts Charles X. Suraci, president; Sam O'Dennis, VP; and William H. Thomas, communica-

AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

Orientation to the C-130J

The Air Force Association and Air Force Office of Legislative Liaison arranged for several Capitol Hill professional staff members to fly aboard a C-130J from the 135th Airlift Group, Maryland Air National Guard, based at Martin State Airport.

The orientation flight allowed key staffers a chance to learn about one of the Air Force's newest aircraft and to meet those who carry out USAF missions at home and abroad. The event was the latest in AFA's ongoing effort to showcase Air Force platforms and its service members in action.

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tions VP; Natalie L. Desmond, secretary; and Thomas Bass Jr., treasurer. They were joined by chapter officers Frank M. Coorsen, Harold Harris, Ronald Perkins, and Charles C. Thompson IV. Robert B. Roit, a **Central Maryland Chapter** member, joined the Anthony Chapter members for the University of Maryland AFROTC awards banquet to present an AFA scholarship in his capacity as Maryland state VP.

More AFA News

■ In New Jersey, the **Sal Capriglione Chapter** welcomed "civilian astronaut" Brian Binnie to their AFA booth, set up at the Lincoln Park (N.J.) Airport's open house in April. Binnie, a retired Navy commander and F/A-18 aviator, piloted the first reusable civilian spacecraft—SpaceShipOne—to more than 69 miles above Earth in October 2004, earning the $10 million Ansari-X Prize. Chapter President Joseph M. Capriglione presented Binnie with a year's membership in the chapter and an AFA baseball cap.

■ The **Nation's Capital Chapter (D.C.)** honored Sen. Orrin G. Hatch (R-Utah) with its Lifetime Achievement Award at a Washington, D.C., reception in July. An Air Force Caucus member, Hatch was an advocate for the F-22 and in his remarks at the reception spoke of his continued support for USAF.

■ **Gen. Bruce K. Holloway Chapter (Tenn.)** President Alfred M. Coffman Jr. and members Bud Bacon and Donald Fritz helped introduce the KC-135R to the media when the 134th Air Refueling Wing debuted their new tankers at McGhee Tyson Air National Guard Base in July. US Rep. John J. Duncan Jr. (R-Tenn.) was among the VIP visitors getting a firsthand look at the aircraft that will replace the unit's KC-135Es.

■ With a model of a B-17, a map of World War II Europe, and several pictures, an Eighth Air Force bombardier described his wartime experiences to the members of the **San Gabriel Valley Chapter (Calif.).** Charles Stevens, who was with the 351st Bomb Group at Polebrook, England, in 1944 addressed the June meeting of the chapter—formerly named the Pasadena Area Chapter—which combined forces with the local Reserve Officers Association to hear Stevens' talk.

■ The **Brig. Gen. Pete Everest Chapter** in Fairmont, W.Va., recently awarded a $1,000 scholarship to Franklin R. Baker, who graduated from Fairmont Senior High School in June and was appointed to the Air Force Academy. Stephen Thompson, president of the 61-member chapter and himself a graduate of Fairmont Senior High, presented the scholarship.

■ At the **Central Florida Chapter's** June meeting, the Civil Air Patrol Central Florida Composite Squadron's color guard posted the colors, and Jack Miller received the chapter's CAP Group 9 Cadet of the Year award. It came with a $100 savings bond, a framed citation—and a year's membership in AFA. ■

AFA Conventions

Sept. 22-24	**AFA National Convention,** Washington, D.C.
Sept. 24-27	**Air and Space Conference,** Washington, D.C.

Reunions

reunions@afa.org

1st AACS Mobile Sq/Gp, 1st MOB, and successor units. Oct. 10-12 in Tucson, AZ. **Contact:** Bob Rainey (512-869-1838) (the-i-rainey@cox.net).

10th Tactical Recon Wg Alumni Assn (1953-59). Oct. 11-14 in Branson, MO. **Contact:** Jerry Graham (210-658-5962).

13th Jungle Air Force Veterans Assn. Oct. 11-15 in Dayton, OH. **Contact:** Dick Phelps, 931 Portsmouth Cir., Maryville, TN 37803 (865-977-4490) (nordicphelps@juno.com).

86th FB Gp Assn (WWII). Oct. 25-28 at the Biltmore Hotel in Oklahoma City. **Contact:** Sid Howard (714-992-2504)(whisperingsid@sbcglobal.net).

98th BG/BW Veterans Assn, all years. Oct. 31-Nov. 4 at the Holiday Inn Orlando Int'l Drive Resort in Orlando, FL. **Contacts:** Dennis Posey (770-509-7734) (dposey@comcast.net) or Ken Laninga (269-751-8231) (bombgrp98secy@charter.net).

359th FG. Oct. 5-8 at the Doubletree Marina in Berkeley, CA. **Contact:** Nancy Jennings (408-529-7034) (nancyjennings@yahoo.com).

390th FS. Sept. 21-24 at Mountain Home AFB, ID. **Contacts:** Maj. Mike Weaver (208-828-4396 or DSN 728-4396) (michael.weaver@mountainhome.af.mil) or Maj. Andrew Kerkman (208-828-1752) (andrew.kerkman@mountainhome.af.mil).

804th Civil Engineer Sq/Engineer Aviation Battalion. Oct. 8-12 at the Marriott Fairfield Inn-Briarcliffe in Myrtle Beach, SC. **Contact:** Dave Anderson (907-852-2418) (davea.barrow@gci.net).

AMMO Chiefs Assn. Oct. 4-8 at the Atlantis Casino and Hotel in Reno, NV. **Contact:** Jerry Modlin (je464399@worldnet.att.net) (www.ammochiefs.com).

Stray Goose International. Oct. 13-15 at Hurlburt Field, FL. Contact: Lee Hess, P.O. Box 9355, Hurlburt Field, FL 32544 (850-651-0353) (papasan@mc130.com). ■

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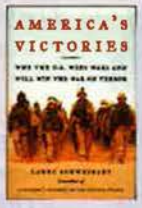
Books

Compiled by Chequita Wood, Media Research Editor

America's Victories: Why the US Wins Wars and Will Win the War on Terror. Larry Schweikart. Sentinel, New York (800-631-8571). 324 pages. $24.95.



Grumman F-14 Tomcat: Bye-Bye, Baby ... ! Dave Parsons, George Hall, and Bob Lawson. Zenith Press, St. Paul, MN (800-766-2388). 200 pages. $40.00.

The Operators: Inside the World's Special Forces. Mike Ryan. Trafalgar Square, North Pomfret, VT (800-423-4525). 224 pages. $35.00.

B-17 at War. Bill Yenne. Zenith Press, St. Paul, MN (800-766-2388). 127 pages. $19.95.

Indestructible: The Unforgettable Story of a Marine Hero at the Battle of Iwo Jima. Jack H. Lucas with D.K. Drum. Da Capo Press, Cambridge, MA (800-343-4499). 212 pages. $22.95.

Preemptive Strike: The Secret Plan That Would Have Prevented the Attack on Pearl Harbor. Alan Armstrong. Lyons Press, Guilford, CT (800-962-0973). 285 pages. $22.95.

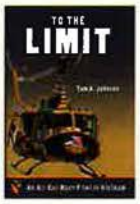
British Single-Seater Fighter Squadrons on the Western Front in World War I. Alex Revell. Schiffer Publishing Ltd., Atglen, PA (610-593-1777). 272 pages. $69.95.

Into the Unknown Together: The DOD, NASA, and Early Spaceflight. Lt. Col. Mark Erickson, USAF. Air University Press, Maxwell AFB, AL (334-953-2773). 667 pages. (download at http://www.maxwell.af.mil/au/aul/aupress/catalog/books/Erickson.htm).

Snowbirds: Behind the Scenes with Canada's Air Demonstration Team. Mike Sroka. Fitzhenry & Whiteside Ltd., Brighton, MA (800-387-9776). 156 pages. $29.95.

Consolidated B:32 Dominator: The Ultimate Look: From Drawing Board to Scrapyard. William Wolf. Schiffer Publishing Ltd., Atglen, PA (610-593-1777). 272 pages. $49.95.

Iran's Weapons of Mass Destruction: The Real and Potential Threat. Anthony H. Cordesman and Khalid R. Al-Rodhan. Center for Strategic and International Studies, Washington, DC (202-887-0200). 366 pages. $26.95.

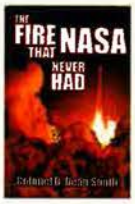


To the Limit: An Air Cav Huey Pilot in Vietnam. Tom A. Johnson. Potomac Books, Dulles, VA (800-775-2518). 396 pages. $26.95.

Eddie Rickenbacker: An American Hero in the Twentieth Century. W. David Lewis. Johns Hopkins University Press, Baltimore (800-537-5487). 668 pages. $35.00.

Launch the Intruders: A Naval Attack Squadron in the Vietnam War. Carol Reardon. University Press of Kansas, Lawrence, KS (785-864-4155). 419 pages. $34.95.

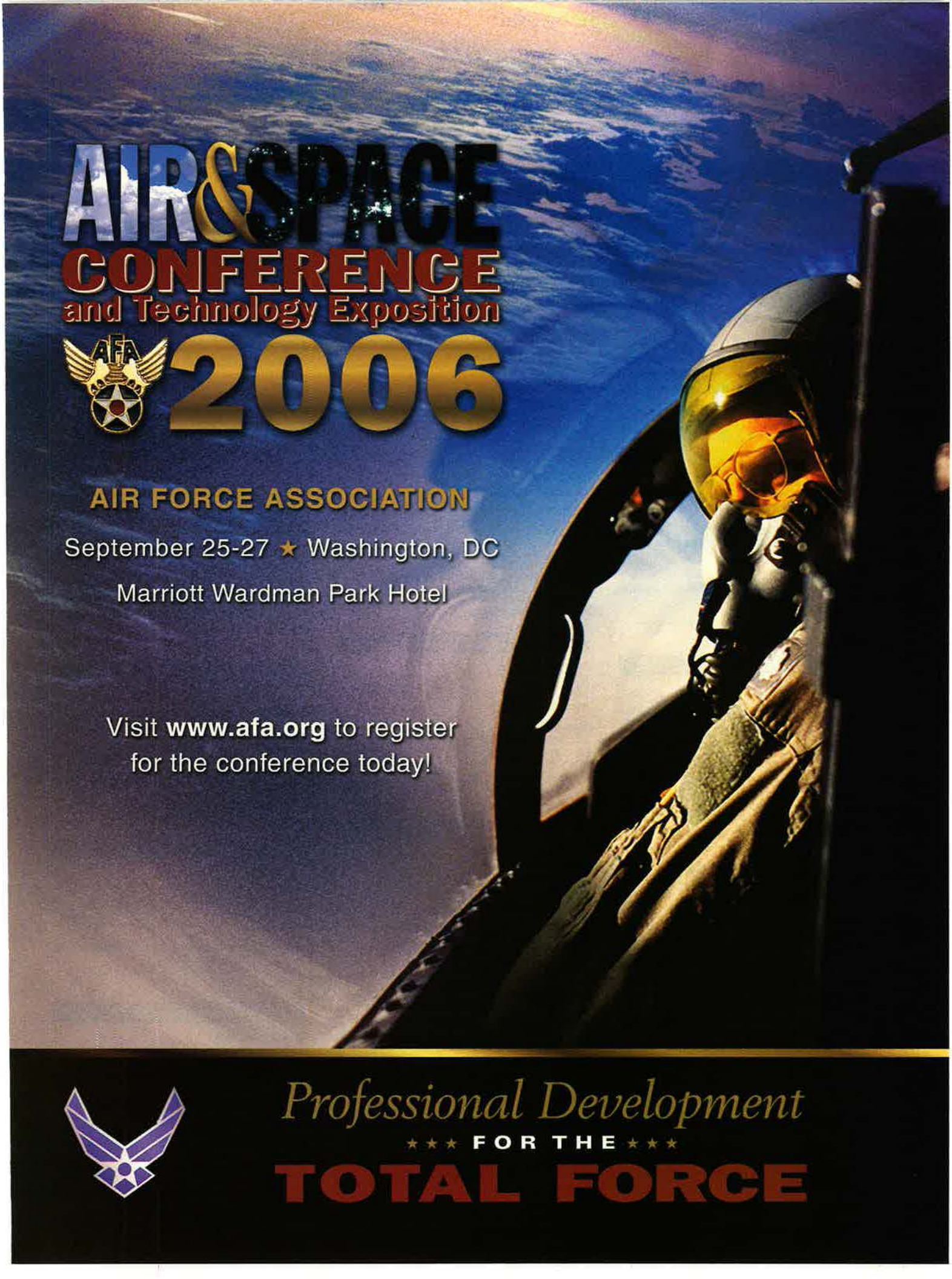
Untold Valor: Forgotten Stories of American Bomber Crews Over Europe in World War II. Rob Morris. Potomac Books, Dulles, VA (800-775-2518). 255 pages. $19.95.



The Fire That NASA Never Had. Col. B. Dean Smith, USAF (Ret.). PublishAmerica, Baltimore (301-695-1707). 262 pages. $21.95.

One Pilot's Story: The Fabled 91st and Other 8th Airforce Memoirs. Andy Anderson. AuthorHouse, Bloomington, IN (800-839-8640). 141 pages. $15.70.

US Liaison Aircraft in Action. Al Adcock. Squadron/Signal Publications, Carrollton, TX (800-527-7427). 49 pages. $11.95.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Air speed requirement: 300 KTAS	✓	?
Mission radius: 600 NM	✓	?
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Rapid reconfiguration: Pallets to Troops to MEDEVAC	✓	?
Survivable: Integrated ASE suite plus numerous redundant systems	✓	?
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AC-47D Gunship

As he beheld the humble C-47 pouring out of his plants in World War II, Donald W. Douglas could not have imagined that the Skytrain would be reincarnated, 20 years later, as one of history's most lethal aircraft—the AC-47D gunship. USAF modified just 53 of these side-firing heavyweights, but they were pivotal in the Vietnam War, where they made short work of enemy troops and suppressed thousands of enemy attacks.

An AC-47D gunship orbiting a ground target could lay down an awesome barrage within its signature "cone of fire." The concept was simple: The gunship would fly a pylon turn around a target on the ground, with port-side guns laying down fire perpendicular to the line of flight. According to the Air Force, a three-second burst from all three guns would saturate an area, putting a round into every square foot of a target area the size of a football field. The AC-47 flew like an overloaded "Gooney Bird"—docile but requiring care—and the crews worked mostly at night, using high-powered flares to light up a target.

The gunships began operations at Bien Hoa AB, South Vietnam, in December 1964. They were instantly popular. The AC-47D not only devastated attacking units but also bolstered the morale of beleaguered defenders. Its gunfire—laced with tracers expended at the rate of 20 per second—made a dramatic visual impact on any observer. At the communist siege of the US garrison at Khe Sanh in 1968, the AC-47 did yeoman work, pinning down enemy troops and illuminating their positions with flares.

Life, however, was short; after five years, the AC-47 was replaced by the larger AC-130A and AC-119G/K types. By then, however, the gunship's place in special operations had been firmly established.

—Walter J. Boyne

This aircraft: AC-47D Gunship #43-48501 as it looked in 1965 with the 4th Air Commando Squadron based at Stewart AFB, N.Y. It is shown with the then-new Southeast Asia camouflage, with the bottom of the aircraft painted light gray.

In Brief

Douglas design (C-47) ★ built by Douglas ★ first gunship combat mission Dec. 15, 1964 ★ first flight (C-47) Dec. 23, 1941 ★ crew 7-8 ★ two P&W radial engines • total conversions, 53 (of 13,177 C-47s) ★ **Specific to AC-47D:** max speed 230 mph ★ cruise speed 175 mph ★ max range 1,600 miles (loaded) ★ armament three 7.62 mm GE GAU-2 miniguns, 48 flares ★ ammo load 16,500 rounds ★ weight 31,000 lb (loaded) ★ span 95 ft ★ length 64 ft 5 in ★ height 16 ft 11 in.

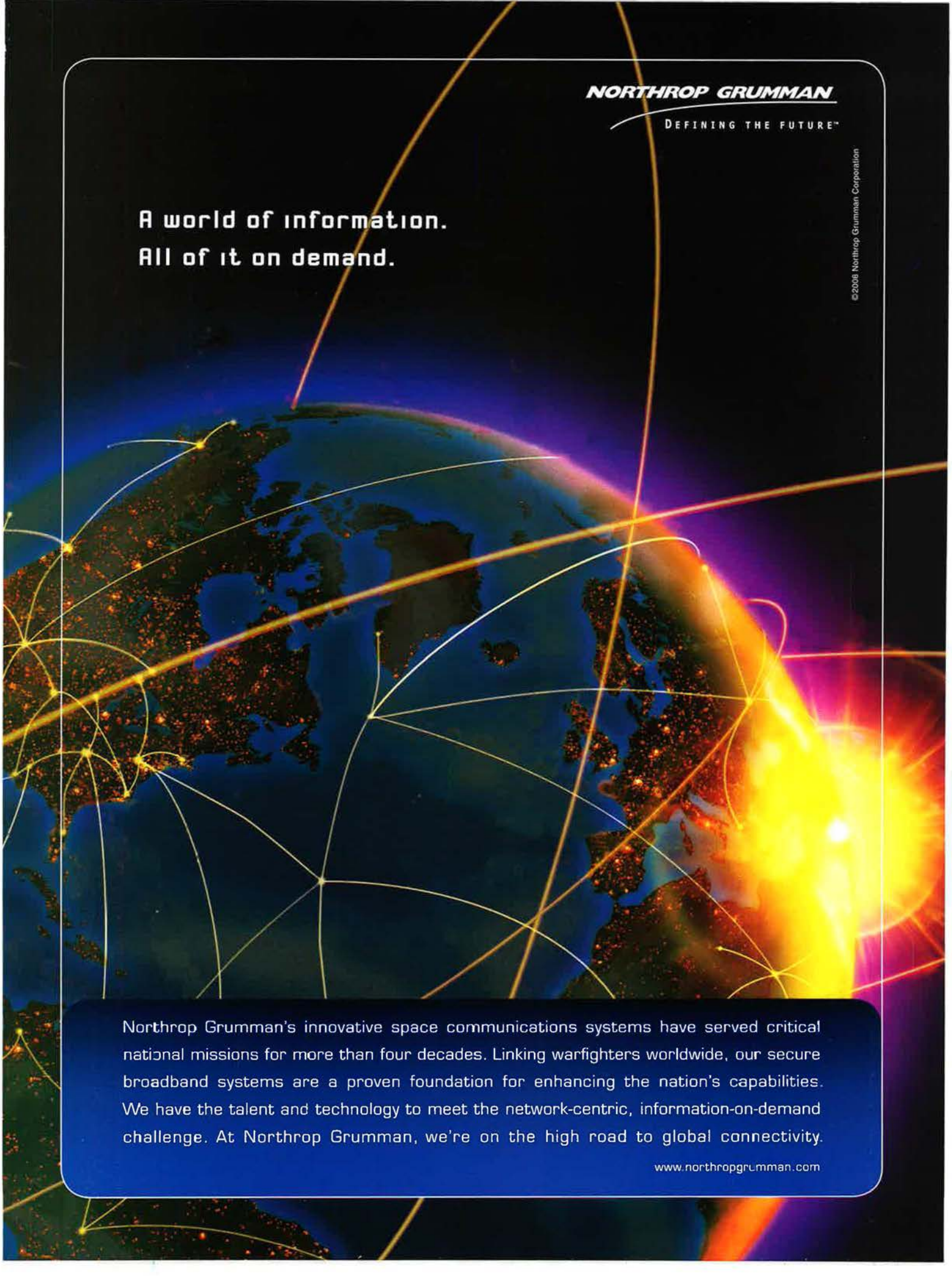
Famous Fliers

A1C John L. Levitow, Medal of Honor ★ Sgt. Nacey Kent Jr., Air Force Cross ★ Capt. Willard M. Collins, AFC ★ 1st Lt. Delbert Peterson, AFC ★ Capt. Jack Harvey and Capt. Lee Johnson, first to fly operational gunships.

Interesting Facts

Each gun could fire 6,000 rounds per minute ★ of 3,926 hamlets and outposts defended, none fell when protected by AC-47 ★ nicknamed "Spooky," "Puff the Magic Dragon," "Dragonship" ★ first designation "FC-47" ("fighter-cargo") dropped after complaints from fighter pilots ★ 15 lost in Vietnam War ★ expended 97 million rounds ★ killed more than 5,300 enemy troops ★ five still in service with Colombian Air Force.

An AC-47 flies over South Vietnam during the Vietnam War.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